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MEDICAL JOURNAL OF AUSTRALIA

(With which "The Australasian Medical Gazette," and "The Australian Medical Journal" are incorporated.)

The Journal of the Australian Branches of the British Medical Association.

VOL. II.—3RD YEAR—No. 21. SYDNEY: SATURDAY, NOVEMBER 18, 1916. PRICE 6D.

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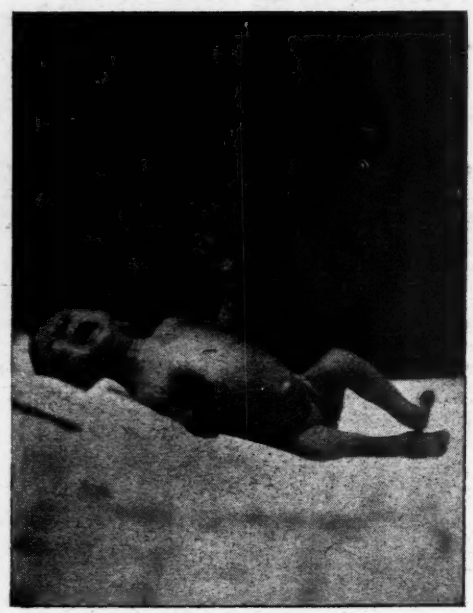
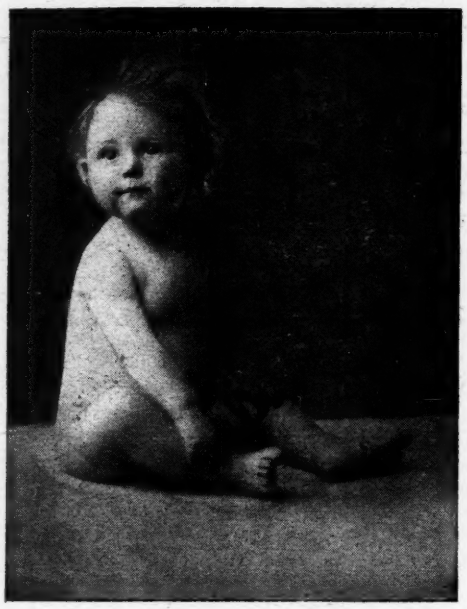


Before Virol.



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POLIOMYELITIS: SOME REMARKS UPON ITS EPIDEMIOLOGY, PATHOLOGY AND SYMPTOMATOLOGY.[1]

By H. Douglas Stephens, M.D., M.S.
Melbourne.

In bringing this subject before you to-night the Council had in view the possibility of Australia being revisited by an epidemic of poliomyelitis, following, as it did eight years ago, in the wake of a severe outbreak in America.

My function is to deal with the epidemiology and pathology of this disease, and, should time permit, with the symptomatology.

First of all I should like to enter an emphatic protest against the continued use of the term infantile paralysis as applied to this disease. It is indiscriminately used to embrace all forms of paralysis occurring in infants, and to include true cases of the epidemic disease developing in people no longer infants. Now that our knowledge of the ætiology and pathology is based upon a sure foundation, we might well dispense with the loose term infantile paralysis, and adopt the more descriptive and scientific word poliomyelitis.

That some living or transmissible virus was the cause of poliomyelitis has long been recognized, chiefly on account of its seasonal and epidemic incidence, its clinical characteristics, and the inflammatory nature of the lesions observed *post mortem*.

Since 1895, when Dr. Altmann reported the first epidemic in Australia (14 cases in South Australia), there have been many outbreaks in different parts of the Commonwealth, notably in Queensland, New South Wales and Victoria. That the disease has occurred in epidemic form prior to 1895 is probable, a typical instance having come under my notice recently in a person who developed it in 1884, and who stated that his parents had told him that several other children were similarly affected about the same time.

Since reporting an epidemic which ravaged Melbourne in the autumn of 1908, I have had opportunities of examining numbers of cases occurring both sporadically and in epidemic form. It must be borne in mind that the disease is endemic here, with occasional exacerbations hardly justifying the title of epidemic.

It may not be inappropriate at this stage to indicate a few of the many perplexing problems which have constantly to be faced. For instance, is the acute fulminating epidemic case to be placed in the same category as the sporadic and often milder disease, or ought we to regard them as being due to different causes having a similar end-product—paralysis? Must we regard that condition in which an apparently healthy child goes to bed at night and awakens in the morning unable to walk on account of paralysis of one leg, as similar from an ætiological point of view to the condition of a child who becomes acutely ill with high fever, delirium and possible convulsions, and with vomiting and pain, followed after a few days by subsidence of the general symptoms and appearance of paralysis? Why should infants from 1 to 3 years be particularly selected to feed the epidemic? Why does it so often happen that one child in a large family, all the members of which are subject to similar conditions as regards hygiene, diet, etc., should be picked out and the rest go scathless? Again, why does the main incidence of the epidemic fall on the poorer people, and on those living in closely-populated suburbs? Very few instances of poliomyelitis occur among the children of the well-to-do. Why is it that during the epidemic, cases tend to group themselves into sub-groups, or foci, here and there throughout the densely populated suburbs, and on the other hand, why are typical cases of the disease found in remote country districts far removed from dust and the ordinary avenues of civilization, apparently arising *de novo*? A case in point might serve to illustrate what I mean. In the height of the 1908 epidemic a fulminating case in a girl was seen by me many miles from the township of Yarram, isolated from her neighbours, and with no obtainable history of contact nor of any other cases in that district. The only possible communication with Melbourne was by means of a parcel of drapery which arrived from a well-known firm in Richmond. On reference to my spotted map of the locality I found that this shop was the centre of a ring of infected houses. Could the infection have been conveyed by fomites or fleas through the medium of the drapery?

The question was constantly arising as to whether insects or vermin, or any of the domestic animals played any part in the production or transmission of the disease. I have seen an instance in which a mother, father and six children slept in two beds in one room. All were thickly marked with flea bites, and yet only one infant was affected. Macewen, in reporting an English epidemic, in 1913, quoted an almost similar instance. In his case, however, the paralysed child was the only one not flea bitten. Several epidemics have been coincident with diseases of an unusual nature among fowls, domestic animals and cattle. In Victoria, in 1908, I heard of cases among fowls and ponies, but was not able to express any definite opinion, although a veterinary surgeon was emphatic in his belief that they were different from the human type of poliomyelitis.

The disease, in my experience, has never spread to doctors or to nurses, or to other children from affected children occupying the same general ward in the Children's Hospital. On the other hand, repeated instances are met with in which the infection

[1] Read at a meeting of the Victorian Branch of the British Medical Association on October 4, 1916.

in all probability occurs in the out-patient and massage department, where children and their guardians are indiscriminately, and often intimately, associated, and but little care taken to guard against contagion. It has been possible to trace the spread of the disease from family to family in some localities by means of contacts. An interesting instance is that of a little girl, aged 2½ years, who, when ailing three days with epidemic poliomyelitis, was visited by a little friend, aged 3 years, who, her mother thinks, kissed her. This little one became paralysed eight days later. Her father worked alongside a man whose little boy also contracted the disease eight days afterwards.

Many cases came under my observation during the 1908 epidemic and in some of the subsidiary outbreaks since that time of obscure febrile ailments occurring among the members of a household in which a definite case of poliomyelitis had taken place or appeared subsequently. In the light of our present knowledge, these cases were atypical or abortive cases. In one family last year a little girl developed a partial left-facial paralysis of the superior neurone type; her eldest sister was affected with an acute monoplegia of cerebral origin, affecting the left lower extremity. Another child was ill at the same time with fever, vomiting and sudden muscular spasms, which her mother described as "the jumps." This child recovered completely in a few days. A boy living next door developed a complete facial paralysis a short time after. The paralysis was apparently of the lower neurone type, with stabismus. It is probable that the atypical case in this instance was the means by which infection was introduced into the neighbouring house. This illustration serves to bring out another feature which I have observed at times, namely, a tendency for rare types of the disease to occur in groups, suggesting a peculiarity in the strain of the infecting agent. This tendency has been noted in other diseases, but was first impressed upon me in the case of poliomyelitis by the occurrence in two members of a family of the uncommon polio-encephalitic and cerebellar types side by side. The question might well be raised at this juncture whether acute encephalitis and ordinary poliomyelitis are due to the same cause. It is a suggestive fact that many more cases of acute encephalitis, and of the still rarer variety, acute ataxia, have been recorded during epidemic periods than in the interval. Sporadic cases of these rarer types are very uncommon.

Most of the children affected had preliminary vomiting and marked constipation; it was therefore reasonable to suggest the alimentary tract as a possible portal of entry. On the other hand, cases were observed in infants upon the breast only, and therefore unlikely to be infected in this manner. The well-known natural immunity to disease that young infants possess seemed sufficient to explain the infrequency of poliomyelitis in the first year of life. Its incidence, however, between the first and the third year was always difficult to account for, and the hints that it was a consequence of infection derived from excessive kissing and fondling seems, in view of recent investigations, to have been an approximation to the truth.

It is no exaggeration to say that so enormous have been the strides made in our knowledge of this disease during the last six years that complete answers can be given to almost all these questions. The thanks of the profession are due to Dr. Simon Flexner and his co-workers at the Rockefeller Institute for the lion's share of this work, but Wickman, Levaditi, Netter and Landsteiner deserve their meed of praise. I would refer members to the *Archives of Pediatrics* for August, 1916, for a more detailed account of this work.

In regard to the transmissibility of the disease, Landsteiner and Popper, as well as Flexner and Lewis, showed six years ago that certain monkeys could be infected with poliomyelitis by inoculation with an emulsion of the spinal cord of patients dead of the disease. The virus was found to be a filter-passer, and to be resistant to the effects of weak carbolic acid, of glycerine, and of drying, but not bright sunlight. It was found to be practically impossible to infect domestic animals with the disease, and subsequent investigations by Flexner have tended to disprove its transmissibility by domestic animals. The virus was next obtained from the washings from the nose and mouth and small intestines of persons who had died of it. Three years ago Flexner and Noguchi succeeded in cultivating the causative organism on special media. Minute colonies of the virus were obtained. They were composed of globular bodies so small as to be just visible under the highest power of the microscope. Injection of the organism produced typical poliomyelitis in monkeys. The virus has been found in the naso-pharynx of human carriers, who, though they have apparently never suffered from the disease, are nevertheless capable of transmitting it to others. It has also been found in the alimentary tract of patients. This fact may explain why it is that gastro-intestinal upset sometimes precedes and appears to be the cause of an attack.

The virus has been proved to reach the patient's central nervous system, in which its main pathological action is exerted, by travelling along the lymph spaces of peripheral nerves, particularly the nasal nerves, to the spinal cord or brain. This is to be regarded as the normal mode of infection in poliomyelitis. The application of the virus to the nasal mucous membrane of apes will cause the disease, but the surest way to induce it is to inoculate the virus into the central nervous system. When introduced in this way the virus is eliminated from the organism largely in secretions from the nose and intestines. We have every reason to assume that the same occurs in human beings, that is that the naso-pharynx is a point of both entry and exit. The secretions of the nose and throat, and perhaps those of the intestines, are probably the chief sources of infection. Although the virus may affect the blood stream in monkeys under certain conditions, it has never yet been obtained from human blood. This is regarded as evidence against transmission by biting insects. It has been found, however, that fleas can live for weeks without food, and if they can carry infection, it may be conveyed long distances. The

weight of evidence is against insects being carriers of the disease in any but a mechanical way. The virus has been found on clothes, handkerchiefs and toys used by patients in acute stages of the disease. Repeated investigations have shown that human beings may remain carriers of the virus for as long as six months. Cases are most infective in the early acute stage of the disease, and the virus probably rarely remains in the body longer than four or five weeks. The incubation period is from two days to two weeks, or possibly longer. It is most commonly eight days.

There is reason to believe that the great majority of adults and many children may be infected with the virus without showing any effects whatever, either because the virus is enfeebled, or because the resistance of the individual is high. Thus it is probable that every patient acutely ill with the disease has in his immediate environment a number of mild and abortive cases that escape observation and diagnosis, and a still larger number of perfectly healthy carriers who form sources of infection to others. It would seem as if all these persons developed a relatively high degree of immunity to the virus, a fact which may explain the comparative freedom from the disease enjoyed by a community for a few years after an epidemic. It seems unlikely that any really effectual remedy other than prevention will be found for a disease which is so fulminating in its attack, and so destructive in its effects on the central nervous system. This is even more probable in the case of poliomyelitis than in the case of cerebro-spinal meningitis. The early recognition and isolation of the first cases in an epidemic is of primary importance. For all clinical and experimental evidence goes to prove that the disease is transmitted through direct contact with persons suffering from an acute attack, or from one of the so-called abortive types, or with carriers, and not by flies or vermin.

Up to the present, laboratory methods of detecting the disease are impracticable and too expensive to come into routine use. By inoculation experiments it has been definitely proved that healthy persons carry the virus, that atypical or abortive cases are true types of the disease, that so-called acute encephalitis, acute cerebellar ataxy and poliomyelitis are all due to one and the same cause.

Another laboratory test, the "neutralization" test, has proved most valuable in elucidating some of the problems of poliomyelitis. Serum obtained from a monkey who had passed through an attack of the disease was mixed with active virus and allowed to stand for four hours. Two monkeys were taken; one was inoculated with the mixed serum and virus; the other was inoculated with the virus alone. The former escaped, and the latter contracted poliomyelitis. The serum of a normal monkey had no such effect. It has been found that the neutralizing effect is present in the case of human beings who have passed through an attack of the disease, however slight or in whatever form, and persists in some instances for over 20 years. This explains a fact long noticed, that one attack of the disease confers immunity. Experiments have shown that active and passive immunity can be conferred on monkeys. Both forms of immunity are most uncertain in their duration, and are not devoid of risk. This means that there exists at present no safe method of preventive inoculation or vaccination, and no practicable method of specific treatment. Quite recently in America several gallons of immune serum have been collected from patients who have recovered from poliomyelitis, but evidence of its efficacy, as a means of treatment, is still awaited.

It has further been shown by inoculation experiments in monkeys that, whereas the virus ordinarily obtained from a human source is of low toxicity for monkeys, it rapidly increases in potency by transmission up to a certain point, after which its virulence begins to wane, until it again reached its original level or one even below this. This seems to accord with the clinical features of cases during epidemics, and also with the lull that frequently follows.

The other factor in epidemiology besides virulence of the organism, namely, the susceptibility, still remains unsolved. A very small proportion of the population (including infants between one and three years of age) can be prone to the disease, when we compare it with measles, diphtheria and other acute infections. This small proportion is quickly used up in an extensive epidemic.

The clinical conception of this disease is now brought into line with our knowledge of its epidemiology, bacteriology and pathology, and we have come to regard poliomyelitis as an acute specific fever with a special tendency to attack the nervous system, any portion of which may be implicated. Eight different clinical types of the disease are now recognized. This classification is based upon anatomical considerations. The types are:—

(1) A superior encephalitic or cerebral type, in which the incidence falls on the cerebral cortex.
(2) An inferior encephalitis, including bulbar, pontine and mid-brain forms.
(3) A cerebellar or ataxic type.
(4) A spinal type, the ordinary form commonly seen.
(5) Ascending and descending types (allied to Landry's paralysis).
(6) The neuritic group (often denied).
(7) A meningitic type.
(8) An abortive or atypical form.

Time and circumstances forbid my pursuing this subject further, but, before concluding, I should like to point out that some years ago the Federal Government prohibited the importation of monkeys into the Commonwealth. In the interests of the community, as well as of scientific research, this embargo should be lifted. Furthermore, as private enterprise in importing these animals is quite extinct, the Government would be well advised to import a supply, in view of the possibility, perhaps I might say probability, of a serious epidemic of poliomyelitis occurring this summer.

INFANTILE PARALYSIS: DIAGNOSIS, PROGNOSIS, PROPHYLAXIS AND MEDICAL TREATMENT.*

By A. Jeffreys Wood, M.D.,
Honorary Medical Officer, Children's Hospital, Melbourne.

Diagnosis.

The diagnosis of cases of anterior poliomyelitis during the initial manifestations of the disease before paralysis appears is one of the many puzzles that confronts the medical practitioner. The initial symptoms may simulate those of a case of meningitis, influenza, an early case of typhoid fever, rheumatic fever, an impending broncho-pneumonia, and various other diseases. Consequently, the correct diagnosis in sporadic cases is but rarely made before the paralysis appears. During an epidemic of the disease, on the other hand, when cases are being looked for, the practitioner turns to the laboratory for aid in diagnosis in the preparalytic stage. The most valuable procedure is lumbar puncture and examination of the fluid. The fluid is found to be under high pressure, is as a rule clear, or rarely may be slightly cloudy; it often shows, on standing, a good fibrin web formation, like that seen in cases of tubercular meningitis. There is a slight or moderate increase of albumin and globulin, and also of the cellular elements. The reduction of Fehling's solution is prompt. Those poliomyelitis fluids which are cloudy (Dr. Neal, of the Department of Health, New York, says) present a polymorpho-nucleosis which may run as high as 90%, but which is usually found to be about 60%. As a rule, however, 80% or more of the cells are mono-nuclears. Dr. Neal also says that large mono-nuclear cells are frequently observed, and are, in a measure, characteristic of poliomyelitis. A study of these cells, with various differential stains, is being made in New York, with the hope of making them of diagnostic significance. Besides getting clear fluid with lumbar puncture, hæmorrhagic fluid may fill tube after tube, showing the same intensity throughout the puncture.

Another rare result of puncture in infantile paralysis is a yellow fluid, which coagulates spontaneously.

In cases of purulent meningitis the fluid is cloudy, the albumin content is greater, the reduction of Fehling's solution much less marked, and the organism can be demonstrated by smear and culture.

In tubercular meningitis, however, the fluid closely resembles that of poliomyelitis, and if tubercle bacilli cannot be detected nothing short of animal inoculation will clear up the diagnosis. The chief points about the spinal fluid from an early case of poliomyelitis are as follows:—It is clear as a rule, is under increased pressure, contains a slight to moderate increase in albumin and globulin, reduces Fehling's solution readily, and reveals a varying cellular increase, chiefly of mononuclear cells.

Fluid from the encephalitic type of poliomyelitis sometimes may be differentiated from lumbar puncture fluid of tubercular meningitis by animal inoculation only. Where monkeys are available it is possible to take the washings from a nose and throat of a suspected case of abortive poliomyelitis and inoculate the same into the brain of a monkey, and produce typical poliomyelitis. This has proved the truth that during an epidemic of this disease there are many children with slight gastro-intestinal symptoms, others with lung signs, or pains in bones and joints, or simply with slight febrile attacks, who really have had abortive attacks of poliomyelitis without paralysis. These children have the organisms of the disease in their throat, and are most probably the means of spreading the disease amongst others if not properly isolated for three or four weeks. It is therefore of the greatest importance to the community at large that the medical profession, during an epidemic of this disease, should watch carefully for these mild cases in a family, especially when another member of the family has a more typical attack. They should insist on proper isolation being observed in connexion with the mild cases as well as in connexion with the severe ones. Once paralysis occurs, there should no difficulty in making a diagnosis.

Differential Diagnosis.

In infants two conditions accompanied by paralysis must be remembered; the one is scurvy, which is seldom seen in babies under 9 months; the pathognomonic bruised appearance of the gums surrounding any tooth that may be cut must be remembered and looked for. If no teeth are cut, the history of the diet should help to clear up doubt; and, finally, the rapid disappearance of the symptoms on a diet of fresh milk is conclusive. The other condition met in infants with loss of motor power is syphilitic epiphysitis. The condition is usually seen in infants a few weeks ofter birth, and may be one of the first evidences of syphilis. It may affect one or both arms. The limbs are not moved voluntarily, and pain is caused directly any movements of the limb are attempted. The electrical reactions of the muscles are normal, and rapid recovery under mercurial treatment always occurs.

The acute pain in the limbs and back, that forms such a prominent feature of the disease in the severe cases of poliomyelitis, may lead to a diagnosis of acute rheumatism or multiple neuritis.

Diphtheritic paralysis and peripheral neuritis, with paralysis, in persons taking arsenic for long periods, should also be mentioned as possible causes of error in diagnosis.

Prognosis.

Although the tendency of the disease is in most cases towards recovery, yet a percentage of persons and children die during the acute stage of the disease. This percentage varies in different epidemics, from 5 to 20. It is worse for infants, adolescents and older people than for children between 2 years and 11 years. Epidemics frequently show a tendency for cases to assume a graver type towards the end, just as the poison seems to become intensified as it is passed from monkey to monkey, until doses that at first only caused paralysis, finally kill the monkey every time. Deaths in this disease are due to the paralysis involving those portions of the brain and cord that preside over respiration and degluti-

* Read at a meeting of the Victorian Branch of the British Medical Association on October 4, 1916.

tion. The extent of the paralysis also seems to affect the prognosis. In New York State in 1910 there were 30 cases in which all four limbs were paralysed, and only 12 of the patients did not die.

In fatal cases, as a rule, there is no fall in the temperature with the onset of paralysis, and death usually occurs within the first eight days.

Of the patients who recover, a varying percentage in different epidemics make a complete recovery. In our 1908 epidemic Dr. Stephens showed that in 25% of the reported cases complete recovery ensued. It is probable that if all the abortive and mild cases were recognized and reported this percentage would be larger. The paralysis may pass away in a few days, or may take weeks or months to clear up completely.

In the remaining cases, unfortunately, the largest percentage of the patients remain more or less permanently crippled, but even in them it is to be noted that recovery of muscular power will go on year after year, and if contraction of muscles is carefully guarded against, muscular power as it returns will improve gradually by use. Many muscles that recover, if the case has not been carefully watched, recover in an over extended position, so that when they do contract, they are not in a position to perform their anatomical functions in a proper manner. Thus, if the *tendo Achillis* becomes contracted owing to paralysis of the anterior tibial group of muscles, and a properly applied night shoe is not used, when power returns in the *tibialis anticus* and *peronei* muscles these muscles are so over extended that they are unable to flex the foot at the ankle. The longer I have watched cases of infantile paralysis the more I have been impressed with the improvement that goes on year after year. A boy of 14 years, whom I have watched since he was severely attacked with infantile paralysis at 12 months, has certainly shown remarkable improvement in the last 3 years, since joining in games at school. Fortunately, only a very small number of the children are left hopelessly crippled.

One point that has impressed itself on my mind is that marked pain and hyperæsthesia has been a prominent feature in those cases with very severe paralysis that has cleared up with difficulty or has failed to disappear; so much so that if I have a case with this pain and tenderness lasting weeks, or sometimes months, I take a serious view as to the length and severity of the paralysis.

Prophylaxis.

Flexner has stated that the virus of infantile paralysis exists constantly in the central nervous organs, and on the mucous membrane of the nose, throat, and intestines in persons suffering from the disease. He has also pointed out that by inoculation tests in monkeys it has been proved that persons in contact with cases of infantile paralysis frequently carry the virus in their throats, although they do not show any signs of illness. Observations carried out in human cases of infantile paralysis and on animals have indicated that the main avenue of entrance of the virus into the body is by way of the upper respiratory mucous membrane, that is, the membrane of the nose and throat.

The chief mode of demonstrated conveyance of the virus is through the agency of human beings, the virus leaving the human body in the secretions of the nose, mouth and intestine.

The conveyers of the poison are those ill with the disease, those who have had abortive attacks without paralysis, and those who may have been contaminated by attendance on or association with cases of infantile paralysis.

The chief means by which the secretions of the nose and throat are disseminated are through the acts of kissing, spitting, sneezing and coughing. Flexner lays stress on the contamination of a mother's fingers in wiping away the secretions of the mouth and nose of her sick child, and the possibility of her spreading the disease to her other children and to food. He also speaks of the danger of contaminating her clothes by constantly nursing the child. These risks are greatly diminished by the hospital treatment of the children.

Protection to the public can best be secured, therefore, by early diagnosis and isolation of all persons suffering from infantile paralysis, and sanitary control of all persons who have associated with the sick, and whose business calls them away from home.

Where homes are not suited to efficient nursing and isolation of the patients, hospital treatment should be enforced, not only in the interest of the patient, but also in the interest of the community at large. The abortive cases at the house should be watched for, and any affected persons detected should be sent to institutions where they could be segregated and kept from mingling with the public for three or four weeks.

The small incidence of cases of the disease amongst nurses and doctors attending these cases, show that personal care of the body by adults and responsible people can diminish the chance of contagion.

As regards personal prophylaxis, the following routine was employed by Dr. Philip Sheppard, Special Investigator of Epidemic Poliomyelitis for the Massachusetts State Board of Health:—

(*a*) Washing of hands with soap and water before and after handling patients, excretions, etc.
(*b*) After handling the patient and washing the hands, further rinsing with bichloride of mercury, or equal parts of boric acid and bleaching powder.
(*c*) Final rinsing in alcohol (70%).

The following measures were carried out as often as practicable, especially before the individual was allowed to mix in the company of healthy people:—

(*d*) Antiseptic mouth wash and gargle with hydrogen peroxide.
(*e*) Eye douche with boric acid lotion.
(*f*) Nasal spray with menthol preparation.

Finally, at the end of each day, all clothes worn, and the bag they were carried in, were placed in a sealed cupboard, and exposed to formaldehyde gas.

Despite the advance in our knowledge of the disease, our information as to the best means of

arresting the spread of an epidemic is at present very meagre, and we may yet have to alter very materially our method of procedure in the future.

Treatment.

Dr. Sophian, in the present epidemic in New York, has charge of a large number of cases in the Kingston Avenue Hospital, and he details the methods of treatment used, in the *Journal of the American Medical Association* of August 5, 1916. He says that the treatment of infantile paralysis may be divided into:—

(1) The relief of hydrocephalus.
(2) Intra-spinal injections of serum, normal human, normal horse, or convalescents' serum.
(3) Control of special symptoms, such as respiratory paralysis.
(4) Symptomatic general treatment; and
(5) Orthopædic treatment.

Relief of Hydrocephalus.—In the cerebral type of cases of infantile paralysis many of the symptoms, such as stupor, headache, convulsions and embarrassment of respiration, may be relieved by lumbar puncture. One puncture is usually sufficient, but in some cases it has to be repeated several times. Let the fluid flow until it drops normally.

Normal horse serum and normal human serum are being tried in 15 minims doses, administered intrathecally through the lumbar puncture needle, after a large amount of cerebro-spinal fluid has been drawn off. The rationale is to produce a general hyperleukocytosis in the cerebro-spinal fluid as a therapeutic measure. Only a few early cases have been treated in this manner. A few show interesting results. Two patients with cerebral symptoms, who had been ill for 48 hours, recovered without paralysis. Regarding the treatment in cases where the paralysis had developed, Dr. Sophian thought he was getting better results with than without the horse serum.

The use of blood serum from convalescents is also being used. Netter, in *Les Archiv. de Médecine des Enfants*, January 16, 1916, reported the use of convalescents' serum in 32 cases with good results. This serum is shown, by the neutralization test in monkeys, to contain antibodies which have proved to be active in destroying the virus six years after an attack, and of modifying its intensity eleven years after an attack.

Flexner[1] has related his experiments on monkeys, proving the value of the intra-spinal injection of immune serum obtained from the monkeys who had recovered from poliomyelitis. He inoculated monkeys in the brain during an afternoon, and began the injection of immune serum 18 to 24 hours later. He injected from 2 to 3 c.cm. of the immune serum through the lumbar puncture needle daily for three days, followed by an interval of three days, when the injections were repeated. The conclusions gained from these experiments were, that if the quantity of virus is not in excess of a given dose, either the infection can be wholly prevented or the onset of paralysis much delayed. In other words, the virus when adapted to the monkey induces poliomyelitis almost without exception, and produces symptoms far more severe, and a mortality far greater than occurs in the disease in human beings. The sera from monkeys and human beings who have recovered from poliomyelitis are capable of preventing, in all but a few instances, the development of the virus, even when inoculated intracerebrally; and in the exceptional instances in which the development is not wholly prevented the onset of the disease is much delayed. The power, therefore, to neutralize the virus possessed by the immune sera is exercised *in vivo* under severe experimental conditions, almost as constantly as *in vitro* under relatively favourable ones. In treating cases, Flexner suggests doses of immune serum from 5—20 c.cm., repeated every 24 hours in the preparalytic stage, if possible, but otherwise as soon as any paralysis shows itself.

Dr. Sophian gives notes of four cases in which he has used immune human serum only once during the preparalytic stage, and concludes that the results were certainly no better than in his normal horse serum series. His method of preparing this serum was as follows: From two adult convalescents, three weeks after attack, 10 ounces of blood were removed through a large needle into sterile bottles, under strict asepsis; the blood was immediately shaken thoroughly, glass beads in the flasks helping in the defibrination. The blood was then centrifuged, and the serum aseptically siphoned off. If the serum is stored, a little preservative is added, and the serum is heated for one hour at a temperature of 56° C. (132.8° F.). A Wassermann test should be taken of the serum.

The Epinephrin Treatment.

Dr. S. J. Meltzer has suggested the use of epinephrin intra-spinally as an active form of treatment. He has given to more than 50 babies an intra-spinal injection of 2 c.cm. of a 1 in 1000 epinephrin chloride solution every six hours from the beginning of the hospital treatment of the cases; they all stood the treatment without the slightest harm, but on August 5, 1916, he wrote regarding the results: "I prefer for the present to make no comment whatsoever."

Hoyne and Cepelka[2] speak of this treatment, and say that some patients show a marked improvement in from a half to one hour following the intra-spinal injection of epinephrin in doses of from 0.5 to 1 c.cm. of a 1 in 1000 solution.

On several occasions a paralysed arm has been moved an hour after the injection. Such marked improvement was, however, seldom permanent, but gradual improvement in some cases seemed to be rapid.

Medicinal Treatment.

The only drug that has shown any useful degree of activity in experiments with monkeys is hexamethylenamin, which is credited with appearing in the cerebro-spinal fluid as formalin after adminis-

[1] *Journ. Amer. Med. Assoc.*, August 19, 1916.

[2] *Journ. Amer. Med. Assoc.*, August 26, 1916, p. 668.

tration. Experiments on monkeys have shown this drug to be effective only very early in the course of the inoculation, and only in a few of the animals treated. Efforts to improve this drug, Flexner says, have only been partially successful, and have not yet reached a point that is of practical value in the treatment of human cases of infantile paralysis.

Respiratory paralysis is the commonest form of death in infantile paralysis.

Artificial respiration kept one child alive for three days. Inhalations of oxygen, under pressure, have also kept a number of patients alive for hours. Where the muscles of deglutition fail in bulbar cases elevation of the foot of the bed, and keeping the patient on the side, allows the secretions to run away by the mouth and nose instead of lying about the entrance of the larynx. I am sure that in one case I saw this posture was the means of saving the boy's life.

SURGICAL TREATMENT OF ANTERIOR POLIOMYELITIS.[1]

By **W. Kent Hughes, M.B. (Lond.), etc.,**
Surgeon, Ear, Nose and Throat, Melbourne Hospital; Honorary Surgeon, Melbourne Children's Hospital.

(1) Acute Stage.

The rest must be as absolute as it is possible to make it. The body and legs should be lightly, but firmly, bandaged to a double Thomas' splint, with head and arm extensions. The limbs should be so placed that all the muscles are in a position of physiological rest; that is to say, the joints should be placed midway between full extension and full flexion, and the forearm, in addition, should be placed midway between the extremes of supination and pronation. The zero position of Batten is quite wrong. Take the deltoid, for example. The arm is placed at a right angle with the body, and the opponents of the deltoid are stretched. Now it is granted that if the opponent of a muscle is contracting, that muscle is stimulated to act, and, consequently, although supports might prevent much physical strain, physiological rest is far from being present. If the splint does not fit well and the arm drops at all, the deltoid is called upon to perform its maximum contraction. When the arm is placed at an angle of 45°, all the muscles are in a position of minimum activity, and a small amount of shifting of the splint will do very little, if any, harm. It cannot be too strongly emphasized that all the muscles of a limb in acute anterior poliomyelitis are affected to some extent. In fact, it has been demonstrated that the whole *pia mater* is engorged and in a state of active inflammation. We must therefore attempt to obtain the most thorough rest in our efforts to get the best results.

(2) Final Stage.

In the final stage of this disease we are confronted with two problems, *viz.*, (1) the restoration of the balance of power, and (2) the rectification of deformity.

[1] Read at a Meeting of the Victorian Branch of the British Medical Association on October 4, 1916.

The want of muscular power may be combated by artificial support or by the rearrangement of tendons. The latter method is not so generally used nowadays as it was a few years back, when almost every case was subjected to tendon shifting. In my own practice I have always hesitated before subjecting a patient to the operation of tendon transplantation, until I have exhausted every artificial adjunct that can be brought into use. For example, I think it is unwise to use such a muscle as the *peroneus longus* in this manner, as we destroy much more muscle power than we can possibly use to any advantage. The only tendon in the foot that I used for this purpose to any extent is the *peroneus brevis*.

Since tendon transplantation is being so constantly called for in war surgery, it may be well to devote some space to it. In paralytic cases, the most satisfactory results are undoubtedly obtained when the tendon insertion into the periosteum and bone is moved to a new position. In war surgery, when we are dealing with muscles which are not yet wasted, the tendon-to-tendon method will yield quite satisfactory results. In the original method of Nicoladini, the tendon to be reinforced was split and the reinforcing tendon was attached to each side of the gap. Many methods have been suggested. The last sixteen years I have always freshened the upper surface of one tendon and the lower surface of the other, superimposed the latter upon the former and secured it with lateral sutures. By this means the reinforcing tendon pulls more directly in the line of the tendon to be reinforced. Care should be taken to preserve, as far as is possible, the action of the tendon that is shifted, by leaving a distal portion that can be attached to a neighbour or a long strip that can be reinforced by winding silk round it or at times by replacing the whole tendon by a strong piece of silk, the one end of which is attached to its original distal insertion and the other end to a neighbouring muscle with a similar action.

May I draw your attention to one or two of the common deformities that we meet with in this disease?

First there is *talipes equinus* or *equino varus* with *cavus*. I wish to point out that the most important part of the deformity is the drop, distal to the medio-tarsal joint (*talo-navicular* and *calcaneo-cuboid* articulation). The contraction of the *tendo Achillis* plays a very secondary part in the production of this deformity. We must therefore first direct our efforts to restore the distal part of the foot to its original position, in other words, to abolish the *cavus* part of the deformity, which, though often apparently slight, is present in some degree in every case.

The surgeon should proceed as follows: He makes a semilunar incision along the inner border of the foot from a point distal to the medial malleolus to the ball of the great toe (dorsal surface), having its convexity toward the dorsum of the foot. A flap including the skin and fascia towards the sole is made, and a scalpel is passed dorsal to the plantar fascia, which is freed thoroughly from its deep connexions, muscles and inter-muscular septa.

The plantar fascia is then carefully and thoroughly divided, care being taken that the lateral fasciculus is as completely divided as the medium. The *abductor hallucis* is then dissected off the metatarsal bone. The muscles are prized away from the bony arch by means of a strong elevator, and all resisting bands of fascia are divided as the surgeon works across the foot. He finishes off by dividing the long and short plantar ligaments and any tarsal ligaments that appear still to resist proper restitution. Joints may be opened if necessary. After the distal portion of the foot has been properly rectified, a very small separation of the ends of the divided *tendo Achillis* will complete the operation.

The results in the case of *talipes calcaneus* are not as satisfactory as those in the case of *talipes equinus*, because the limb has been much more severely affected by the disease. The anterior part of the foot should be treated in the same manner as that described above, if, as is generally the case, there is marked drop of the distal portion of the foot at the medio-tarsal joint. When this is thoroughly healed the next step is proceeded with. This involves an attempt to replace the talus, or, if that fails, to reform the bone by the removal of a wedge-shaped piece from its original upper but now posterior surface. An incision is made along the lateral border of the foot, and the muscles and fascia attached to the plantar surface of the *os calcis* are exposed and freed from the bone. The *tendo Achillis* is cut off with its periosteal and bone insertion attached, and an attempt is made to force the bone into its old position. If this fails, the wedge mentioned above is removed and the loose end is sutured to other portion. If *Achillis* be of use, it is transplanted on the plantar surface, and, if necessary, the *peroneus brevis* is also cut away from its distal insertion and sutured to the plantar surface of the *os calcis*. If the tendon is too long to act upon the heel effectively, the tendon must be buckled up and sutured.

The usual operations on the knee-joint and upper limb described in the text-books may be used after all the aid supplied by springs and stop-joints have been exhausted.

In the case of the deltoid type of paralysis, I am of opinion that much more use can be made of neighbouring muscles, which are often unaffected, than surgeons generally are willing to do. The clavicular portion of the *pectoralis major* and sterno-mastoid and the occipital portion of the *trapezius* may help to make up for a paralysed and useless deltoid in many cases

Reports of Cases.

A CASE OF ACUTE HYDROCEPHALUS IN CEREBRO-SPINAL MENINGITIS.[1]

By **R. O. Douglas, M.D. (Melb.),**
Surgeon, Bendigo Hospital, Victoria.

R.K., æt. 26 years, a nurse at the Bendigo Hospital, was on night duty in the meningitis ward on April 27, 1916, when she had a very violent struggle with a soldier patient, whom she tried to keep in bed. She was very badly mauled. The patient spat and coughed in her face repeatedly. She washed her face in a disinfectant solution soon after. The patient was suffering from a severe type of naso-pharyngitis and nasal discharge. Bacteriological examination was not carried out.

On April 31 she awakened at 2 p.m. feeling extremely tired. Forward movements of the left shoulder were painful. There was no headache. She went for a walk and returned at about 5 p.m. On lying down she fell to sleep. She awakened at 7 p.m. with violent pain in the head and very severe pain in the arm. The temperature was 101.4° F.

I examined her at 9 p.m. and found her excitable. The left arm was intensely hyperæsthetic, especially above the clavicle, where the slightest pressure caused intense pain to shoot up into the back of the head and into the shoulder. She became more excitable during the examination. Attempts to flex the head produced considerable pain in the back of the neck. Kernig's sign was not present. There was a scattered reddish rash over the body. The rash had a trace of purple colour in it. Patches of erythema were seen on the pressure areas. The blood pressure was 96 mm.

At 9.40 p.m. lumbar puncture was performed, and 20 c.cm. of clear fluid escaped. There was no impulse on coughing. Fifteen cubic centimetres of somewhat cold serum were injected. The lumbar puncture did not have the slightest effect on the headache. Paræsthesia of the legs was noted. On examination the fluid was found to be quite clear. Only one lymphocyte was found in a field of a smear from the centrifuged deposit. Fehling's solution was reduced appreciably by the fluid. The tests for protein appeared in the artificial light to be negative. Morphine (gr. ¼) was given, but no relief followed. The patient did not remember anything from this time until noon on May 4, *i.e.*, a period of 98 hours. At midnight 10 grains of veronal were given, and some broken sleep was obtained.

At 6 a.m. on May 1 the patient was very noisy and delirious. Head retraction was marked, and was extensor in type. The pain in the chest had cleared up, and the pain above the clavicle was less severe. The headache was more intense. The rash was intense and typical. A quarter of a grain of morphine was given without benefit. Lumbar puncture was performed at 1.45 p.m., and 15 c.cm. of very opalescent fluid were obtained with difficulty. The first few cubic centimetres escaped in a sharp squirt, but the remainder dripped slowly. The puncture had no effect on the headache. There was no impulse on the fluid issuing from the needle caused by coughing. Fifteen cubic centimetres of serum were injected. There was no pain in the legs. The patient had not vomited, but the headache was evidently getting worse. The blood pressure was 142 mm. before the lumbar puncture, and 148 mm. a half of an hour later. The fluid was found to be slightly cloudy. A loopful smeared on a slide was examined, and a few pus cells, but no bacteria were seen. The deposit on centrifuging contained typical gelatinous pus. On staining a smear from the deposit scattered Gram-negative diplococci were seen.

The patient vomited at 4 p.m. and the headache became intense. Morphine (gr. ¼) was given. I rang up Dr. Anderson at this time, and asked his advice in regard to the treatment and the question of operation. He suggested that I should make a large subcutaneous injection of serum. At 6 p.m. 120 c.cm. were injected into the sheath of the rectus muscle. Half of the dose was Parke, Davis and Co.'s serum and the other half the University serum. She had had a few minutes' sleep after the last injection of morphine. The blood pressure was 155 mm.

The headaches had been spasmodic up to 10 p.m. on May 1, 1916, when they assumed a terrible type, that characterized the attacks recurring at intervals during the night. The attack came on suddenly, and was of agonizing intensity. The patient sat up in bed and shrieked that her head was bursting. The pain drove her almost frantic. The attack appeared to come on in increasing paroxysms for five or ten minutes, and then subsided rapidly. During these attacks the patient's speech was thick and almost unintelligible. As they were passing off she sang in crooning tones for a while, and then appeared quite sensible, though very exhausted. After the attack had passed off she was unable to see people round her clearly. A quarter

[1] Read at a meeting of the Victorian Branch of the British Medical Association on October 4, 1916.

of a grain of morphine was given during the attack. At midnight the second attack took place. The blood pressure measured 170 mm. at this time. At 2 a.m. on the 2nd she had the third paroxysm. As it was passing off she could not recognize her attendants. Another terrible attack occurred at 3 a.m. This was controlled by chloroform inhalation. This was compassed without abolishing the power of speech. The patient spoke quite clearly and distinctly during the administration, and told us that the attack was passing off. The blood pressure registered 174 mm. The pupils were dilated and examined. There were no signs of œdema of the discs. The veins were neither fuller nor more tortuous than normal. A half of an hour later Dr. T. C. Ker confirmed these observations. She was unable to see the ophthalmoscope, and was compelled to grope with her hand to fix her eyes for the examination. Another spasm took place at 5 a.m., and chloroform was again administered. Frequent spasms occurred during the early hours of the morning, and all were controlled by chloroform inhalations. The patient was sensible in the intervals. Much relief was derived from the application of cold water to the head. The blood pressure rose to 180 mm. by 8 a.m.

Dr. T. E. Green was consulted, and an operation was decided on. During the next hour inhalations of chloroform vapour were given almost constantly. She was apparently lapsing into coma. She was then taken to the theatre. Anæthesia with chloroform was induced by Dr. De Lacy. Dr. Green assisted me during the operation. As soon as she was unconscious the head was shaven. This proved somewhat difficult on account of the thickness of her hair and of a considerable seborrhœa. A scale on paper had been prepared, and was covered with a sterile glass slide, so that any measurements required could be made with a pair of sterilized calipers.

A half-inch trephine was applied at Keen's point, but through an oversight this was done on the right side. After the skull had been trephined, the *dura mater* was found to be bulging tensely into the circle, and projected almost as far as the external surface of the bone. There was no pulsation. A small opening was made through the *dura mater* and arachnoid, but no fluid escaped. A needle was then passed into the ventricle to a depth of exactly two inches from the outer bony surface. Very thick fluid dripped out for a short time, and then the flow ceased. A closed dressing forceps was passed into the ventricle, and between 10 and 20 c.cm. of very thick fluid was removed. Pulsation then became visible. The patient was allowed to recover from the anæsthesia sufficiently to be able to strain. This had no effect on the dripping of the fluid from the ventricle, as it was too thick. The handle of a scalpel was then passed beneath the dura, but no more fluid was liberated. This was to be expected, as care was taken not to tear the arachoid. Lumbar puncture was performed. After a few cubic centimetres of fluid had escaped, and we were therefore sure that the needle was lying in the subarachnoid and not in the subdural space, 45 c.cm. of serum were injected into the theca. In the meantime the forceps in the ventricle had been replaced by a needle. The injection of the first 15 c.cm. of serum into the spinal canal had no effect on the flow of the ventricular fluid, but as more was introduced the ventricular drip increased perceptibly. No sign of serum was detected in the fluid issuing from the ventricle.

The raised tension within the dura had disappeared completely by this time. Fifteen cubic centimetres of serum were injected into the ventricle. As far as we could judge, this had no effect in raising the tension in the *dura mater*. The incision was sutured without drainage. The operation had lasted for about one hour. Twenty grains of trional were administered *per rectum*, and the patient was returned to the ward.

She was quiet for a time, but soon became restless, and started picking at the bandages. She was disinclined to speak, but answered "yes" and "no" sensibly. She performed any action she was told to carry out.

At 11.40 a.m. she was given ¼ gr. of morphine, and her head was placed on a water bag, and ice bags were also applied to the head. The slightest noise caused intense "jarring" of the head. Paralysis of the right arm and leg was noted at 2 p.m., but no paralysis of the face. She was conscious at 3 o'clock, and the blood pressure was 110 mm. At 6 p.m. she replied when spoken to, and said that her headache was gone. She talked nonsense at intervals. At 7.30 p.m. a catheter was passed, and urine, containing a trace of albumin, was withdrawn. At 8 p.m. there was an occasional movement of the right shoulder. She wanted to turn on to her right side. She took nourishment well, but slowly, during the night. On the following morning (May 2, 1916) she passed urine spontaneously, and the bowels were well opened. A purulent discharge from the left eye was present. The right knee jerk was much exaggerated, and Babinski's reflex was typical. The leg tended to be spastic, while the arm was quite flaccid. There was no paralysis of the tongue or face at 6 a.m., but a definite paresis of the face was noted at 9 a.m. This became intense rapidly. At noon she had a well-marked and typical sense of well-being, interrupted at intervals by periods when she talked nonsense. There was some paræsthesia of the right leg. There was much yawning.

On May 4, 1916, the patient was quite rational. There was considerable confusion of words; she said "cut" when she meant "knife" and the like, and had difficulty in making herself understood.

Dr. Sewell examined her at noon. She was then able to move her thigh. There was no definite involvement of the sensory system to be detected. She could not move her arms, though when the limb was placed in a position midway between extension and flexion we were under the impression that there was sufficient effort to start the limb out of this position.

At 6.30 p.m. she sat up suddenly, and complained of intense headache. A quarter of a grain of morphine was given at once. The spasm lasted about ten minutes, but she said that it was nothing like the paroxysms that had preceded it. The sight of the left eye was definitely better than that of the right eye.

On May 5, 1916, she was improving. She yawned repeatedly. There was no headache, and her condition was "happy." She complained at times of nausea. An enema was followed by a constipated motion. She was exhausted after the motion, and a catheter had to be passed. She had a good night. On the 6th she had great difficulty in recollecting the names of both persons and objects. There was evidently something interfering with her association of words. The temperature and pulse-rate reached the normal levels, and neither was subsequently raised. The eyesight was much improved. She could recognize persons across the yard. In the evening the word-confusion was less marked, and she talked sensibly with her mother for some time.

On May 7, 1916, the facial paresis was considerably lessened. No movement of the arm was effected. She had a good day until the evening, when she had a severe headache. Phenacetin and caffeine had no effect. An hour later hiccoughing set in, and morphine was given. Lated on she received $^1/_{100}$ grain of hyoscine.

She was much clearer mentally on the 8th. The sense of well-being had disappeared completely, and very little headache was complained of. She could read large type print well, but had difficulty in saying the proper words when reading aloud. The progress was maintained until 11 p.m. on May 10, when she was awakened by thunder, and seemed to be hysterical, crying and talking nonsense. She shook at intervals. One-sixth of a grain of heroin was given, and she calmed down. The bowels were well opened. The splints, which had been applied to her arm and leg, were taken off on May 11, and massage was applied. There was no movement of the arm muscles nor of the muscles of the shoulder girdle. On May 12, some movement of the arm was obtained. The optic discs were normal. The mental condition was very unstable. She was inclined to cry if she did not get her own way at once.

On May 16, 1916, her memory for persons' names was still defective. She referred to one of her best friends as "that girl," because she could not recollect her name.

Progress continued to be satisfactory until the evening of the 21st. The power of the muscles in both leg and foot was returning. The bowels had not been opened for 36 hours. At 7 p.m. she was laughing and talking, apparently in her sleep. A little later she awakened, crying with pain in the leg, in which there were severe and uncontrollable clonus. She became almost maniacal. An injection of ¼

grain of morphine had no effect. The mental condition then became blurred. A second dose of morphine was followed by a period of quietude. Phenacetin (grs. xii.) and caffeine citrate (grs. v) had no effect. The blood pressure was 110 mm. A high enema was given, and flatus, some inspissated fæces, and part of the injected fluid were returned. At midnight there was some vomiting. The patient was apparently again losing her sight. There was no bulging through the trephine wound, but there was a doubtful impulse on coughing. Hiccough occurred at intervals. The blood pressure rose to 112 mm. At 1 a.m. another injection of morphine (gr. ¼) was given. The vomiting was repeated frequently during the night. A second enema was followed by the passage of small constipated fæcal masses. At 4 a.m. she was given ¼ grain of morphine, which had no apparent effect on the mental condition, headache or vomiting. During the whole of this time there was no definite change in the pulse or temperature, and the trephine wound remained unchanged. The systolic blood pressure was 110 mm., and the diastolic pressure was 75 mm A further enema was given, and a moderately good motion was evacuated. The patient had been catheterized twice during the night. By daybreak she was apparently becoming quieter, and she fell to sleep. No further nervous symptoms were noted. We regarded the attack as hysterical, more particularly because an attack of appendicitis had been simulated in a somewhat similar manner about one week after the removal of an acutely inflamed appendix some time before. The disturbance was somewhat late to be regarded as a serum reaction.

On July 1, Dr. Ker examined the patient's eyes, and discovered a right homonymous hemianosia. On the 4th she commenced to oppose the thumb, and on the 6th she made her first attempt to walk. Two days later she walked a short distance by herself. On July 12, Dr. Ker plotted out her visual field, and found that the left macula was not involved. The greater part of the right macula was functionating.

On July 31, 1916, she was walking fairly well, but there was a tendency for the knee to snap back. This caused her severe pain in the knee. Up to this time massage had been carried out personally. A professional masseuse was now engaged. The patient was discharged on August 12, 1916, but was kept under observation and treatment for about two months.

I will now let members examine her, so that they may determine for themselves the power that has been regained. She is able to knit, to write slowly, and has made satisfactory attempts at pianoforte playing, at which she was very good.

Dr. Sewell has examined her recently, and says that he is hopeful that by the end of two years she may be much improved. Dr. Edward Ryan has examined her eyes, and reports that, apart from the hemianopsia, they are quite satisfactory. There is, in his opinion, every likelihood that the hemianopsia may cause her less trouble, as she grows accustomed to it.

Reviews.

TWO QUARANTINE SERVICE PUBLICATIONS.

The Quarantine Service takes its duty seriously, and obviously wishes to stand well in public and professional estimation. In view of the fact that the duties of the Department include the adoption of the best means to prevent the introduction of exotic disease into the Commonwealth, a policy has been devised for the purpose of giving information to quarantine officers and others on the nature and epidemiology of the diseases with which the Service is concerned. Some of the volumes have already been discussed in these columns. Service Publication No. 7 deals with the subject of cholera,[1] and has been compiled with care and competence by Dr. J. S. C. Elkington. The contents of this book are divided into a historical survey, an account of the symptomatology and clinical diagnosis of the disease, the bacteriological diagnosis and the treatment. The epidemiology is handled in three chapters on the mode of spread, the question of cholera carriers and the prophylaxis and control. Medical practitioners who may be brought face to face with cases suspected of being cholera will find the short account of the clinical course of typical and atypical forms of use to refresh their memory, and will have in the chapter on the bacteriology a reliable guide for arriving at the truth. The author informs his reader how to proceed in the collection of fæcal material for transmission to a bacteriological laboratory. He appends to these instructions others for use when operations are being carried out on a large scale for the purpose of tracing carriers among the community. The notes on the post-mortem appearances of cholera are somewhat of the "cut and dried" type, but it must be admitted that the more salient of the macroscopical changes are clearly described in a few terse words. The bacteriological characters of the vibrio, and the methods adopted in the laboratory for its recognition, are well described and quite reliable.

Dr. Elkington quotes various authorities in support of the doctrine that the spread of cholera is closely analogous to that of enteric fever, and adduces all the available data in order that the practical measures which have been proved to be of avail in the prevention of the latter may be adapted to the conditions of the former. The carrier question has received much attention during recent years, and in this pamphlet we are given an excellent summary of the observations and theories connected with this matter.

Service Publication No. 8 is a very different kind of book. It is entitled "Notes on Classification of Common Rodents," and issues from the pen of Mr. Heber A. Longman.[2] The importance of having a handy list of the Australian species of rodent, and a short, readable account of them is quite obvious in the campaign against plague. The use of the pamphlet is not limited to the question of plague; rodents are too often associated with unhygienic conditions to be desirable neighbours of man. The more we know of these animals, the more effective will our methods of destruction be. The pamphlet in question represents a sufficiently detailed and very accurate description of these undesirables.

Notes on Books.

ADVICE TO MOTHERS.

The National League for Physical Education and Improvement, the National Association for the Prevention of Infant Mortality and the Association of Infant Welfare and Maternity Centres have formed a joint committee for the purpose of issuing a booklet which might serve as a safe guide for expectant mothers during the lying-in period and to mothers after the birth of their babies. This committee has published a cheap little volume entitled "To Wives and Mothers,"[3] and we are convinced from a perusal of it that those women who obtain a copy and follow the advice therein contained will be saved from many of the avoidable ills which threaten themselves and their infants. The authors have avoided the usual pitfall, namely, to hand to the mother a book from which she can treat pathological conditions. The contents of the book are restricted to common-sense hygiene and to simple facts which contribute to the well-being of women and their babies.

BELGIAN DOCTORS' RELIEF FUND.

Dr. H. A. Des Voeux, the Honorary Treasurer of the Belgian Doctors' Relief Fund, in London, has written, acknowledging the receipt of a cheque for £34 16s. from members of the Queensland Branch of the British Medical Association. In thanking the subscribers in the name of his Committee, Dr. Des Voeux states that support is still badly needed by his Belgian colleagues.

[1] Asiatic Cholera. Quarantine Service Publication No. 7, by J. S. C. Elkington, M.D., D.P.H.; 1916. Melbourne: Issued under the authority of the Minister of Trade and Custom, by Albert J. Mullett, Government Printer. Royal 8vo., pp. 80.

[2] Notes on Classification of Common Rodents, with List of Australian Species. Quarantine Service Publication No. 8, by Heber A. Longman (Queensland Museum); 1916. Melbourne: Issued under the authority of the Minister of Trade and Custom, by Albert J. Mullett, Government Printer. Royal 8vo., pp. 28.

[3] To Wives and Mothers: How to Keep Yourselves and Your Children Well and Strong; 1916. London: Published by the National League for Physical Education and Improvement; 8vo., pp. 49. Price, 3d.

The Medical Journal of Australia.

SATURDAY, NOVEMBER 18, 1916.

Setting an Example.

A short time ago the Director-General of Medical Services issued a memorandum to the medical profession, asking everyone to apply for a commission in the Australian Army Medical Corps Reserve. The advisability of hearkening to this invitation was advocated in these columns. In the meantime, the people in the Commonwealth have registered a decision against compulsory service, and the responsible Ministers have now the task of finding ways and means of supplying men to fill the gaps in the lines in France. As far as the combatant forces are concerned, it would seem as if voluntary enlistment has failed within recent months. The Principal Medical Officer of the Second Military District informed the members of the Northern Suburbs Medical Association (New South Wales), at a meeting called for the purpose of inviting members to act on the advice of the Director-General (see page 438), that the requisite number of medical men had been forthcoming up to the present. Notwithstanding this fact, there is need for more to be done, and it would be disastrous if the medical profession were to adopt the attitude of self-complaisance, and were to relax their efforts to carry out their national duty.

It will be seen from the opinions expressed at the meeting referred to that some medical practitioners seek for guarantees of immunity which the authorities cannot and should not give, and that others are prepared to undertake service in the Australian Army Medical Corps, provided that their aspirations may have a chance and that they are not called upon to suffer discomfort or inconvenience. The present is a time for plain speaking and for direct action. There are two problems to be faced. The first is to provide medical service for the Army, both in the Commonwealth and abroad, and the second is to provide medical service for the civil community. One quarter of the medical profession has made great sacrifices. The risk to life may be somewhat less than that attaching to the members of the combatant forces, but the evidence that it is not negligible is to be found in the list of the killed. The doctors who have gone to the front have not hesitated to share the trials and dangers of the troops, and we believe that fear of personal injury is not a reason why those who have stayed at home have not offered their services. It would almost seem as if some have failed to realize the necessity of offering themselves to their country. There is a feeling abroad that men are disinclined to join either the Australian Imperial Forces or the Reserve as long as others who have apparently fewer and less strong ties are sitting comfortably in their homes. Surely each man's duty is plain, without any reference to the manner in which his neighbour regards his duty. Then there is the fear in the minds of practitioners that the financial loss will be greater than that entailed by the absence from home for a time. It is deplorable when those practitioners who are tending the civil community take an advantage of their absent colleagues and entice patients away from them. The majority must feel that this is a matter of honour, and thus scorn to break faith with the man whose work they are doing during his period of service. None of these reasons justify a man in holding back. Sacrifices must be made, and we venture to suggest that no limit should be imposed on the extent of the sacrifice which any man is prepared to make.

The proposal of the Director-General of Medical Services is that every medical practitioner should express his readiness to help by joining the Reserve. This will entail but little discomfort to the individual. We would urge men to go much farther. If the members of the medical profession as a whole would apply for a commission in the Reserve, and at the same time intimate to the military authority that they place themselves unreservedly at their disposal for any duty whatsoever, all our difficulties would disappear. Due consideration would be given to the value to the community of the work each man is performing; only the physically fit would be chosen for service abroad, and men with financial and domestic obligations would be chosen after the unencumbered had been exhausted.

We have promises to this effect. Means will be found to adjust the requirements of the civil community, so that every citizen in the Commonwealth can obtain medical attendance. The military needs within the Commonwealth could be covered without difficulty, if all were prepared to assist. But there is one essential for success in such an arrangement. Every man, when placing himself unreservedly at the disposal of his country, must be impressed with the necessity in military life of doing what he is told without question or demur. Stipulations and conditions are impossible in a smooth-working military machine. Those who wish to serve their country should not care how their services are used, as long as they are used. There must be trust in the men in authority that the special skill of each individual will be utilized to the best advantage of the Army. Discipline will not do any man harm. If the whole profession throughout the Commonwealth entered the service of the Empire, a precept of extraordinary value would be set.

TREATMENT BY PHARMACISTS.

In spite of the great advances made in medical science since the superstitions and mysteries of the middle ages passed for knowledge, accuracy in diagnosis is not always achieved, even when care is exercised and all means are employed to guard against mistake. A practitioner who claims that he never makes a mistake in diagnosis is a man to avoid. If with the years of training and further years of experience medical practitioners cannot always be certain of recognizing the disease from which a patient is suffering, it becomes obvious that a person without medical training can never be trusted to make a diagnosis. Treatment, to be of avail, must depend on a correct diagnosis, and, consequently, the charlatan who endeavours to treat disease must be a very dangerous person. This danger is increased a thousand-fold when the unqualified person agrees to treat a patient without seeing him and making an examination. Members will read with amazement that a medical witness at a magisterial enquiry touching the death of a child gave it as his opinion that it was "a cautious act" for a chemist to prescribe for a patient without seeing him when a lay person described the ailment as a trivial one. In the case in point, the child died after having been ill for some days. The father and a pharmacist had agreed that the boy was suffering from mumps, and the latter "prescribed" for this condition. The medical witness, who saw the child after death and only made an external examination, expressed the opinion that the child had died of "paralysis of the heart" following diphtheria. It is needless to point out that this opinion is a mere belief, and that the enquiry became a farce, seeing that no post-mortem examination was carried out. There is nothing to prove that death was not due to something quite different. It might have been some chemical poison. No one can tell unless a post-mortem examination is conducted by a competent pathologist. The public is easily persuaded, and no doubt does not feel disquieted by this occurrence. The danger obtaining when a person without medical training dares to treat a pathological condition without any idea of what that condition is, is very real, and from the evidence given in this case, only a bold man would hazard an opinion that skilled medical attendance would not have saved the child's life. It is difficult to determine which of the two, the foolishness of the father in trusting the pharmacist or the daring of the latter in undertaking to prescribe for the child he had not seen, was the more deplorable. Prescribing over the counter, even if it only entails an aperient or cough mixture, should be forbidden, since the person prescribing is not in a position to know what the condition of the patient is.

TYPHUS FEVER.

Twenty years ago, Goodall and Washbourne, in their text-book on infectious diseases, taught that typhus was exceedingly infectious from person to person, and that this was the way that the disease was usually disseminated. They also favoured the view that, under certain circumstances, this disease might be spread by fomites. They recognized the predisposing effect of overcrowding and starvation. The same views were taught six years ago. It is now realized that the infection is conveyed by a vector, the body-louse. The older teaching was dropped to a large extent when this fact was recognized, but probably without justification. Murchison gave very definite reasons for believing in the spread by means of inhalation as long ago as 1876. Moon had reason

to support this view after a very extensive experience of the epidemic in 1914-1915 in Serbia. He has recorded his views in the Chadwick lectures, delivered in London in 1915. We must therefore assume that, while the body-louse carries the infecting organism in the majority of cases, direct infection through the respiratory tract is by no means a negligible mode of propagation of the disease. Delearde and D'Halluin have observed the conveyance of infection by expectoration, particularly during the early stages of the disease. This point in the ætiology of the affection is of great importance, since the stage when prophylactic measures should be employed vigorously would be several days earlier if the infecting material were derived from the respiratory tract than if it were sucked up by lice from the cutaneous vessels. The history of the Skoplje epidemic and that of the Kragujevatz outbreak favour the latter-day view of the double manner of the spread. It has long been known that the more malignant forms of the disease (so-called *typhus siderans*) give rise to cases in the immediate vicinity of the patient. In these cases, the rash is often absent, and death may occur before the rash is timed to appear. The probability is that, under these conditions, the peripheral blood does not contain the virus, or does not contain it in large quantities. If this assumption be correct, it would be difficult to explain how a louse could convey infection. Notwithstanding these considerations, there is but little doubt that the immunity from typhus enjoyed by our troops in Gallipoli was largely due to the care bestowed on ridding the men of lice. Moon lays great stress on the importance of overcrowding, physical exhaustion and ill-nourishment in preparing for the reception of the infecting virus. There is no doubt that the conditions in Gallipoli in these three respects were favourable. Overcrowding there was without any doubt. Physical exhaustion must have been present frequently under the trying conditions, and the prevalence of dysentery and of the enterica group of affections led to very marked emaciation of the majority of the men on active service. These facts emphasize the necessity of a rigid louse destruction when and where ever this disease may occur. In Serbia, the British employed a petrol preparation called *hemijelli* and a cheap mixture of equal parts of kerosene and vaseline, which acted well.

Plotz has claimed to have discovered the causal organism of the disease. It is a small, anaerobic, pleomorphic, Gram-positive bacillus. There is, however, doubt in regard to whether this bacillus is really the cause of typhus. Hort, who appears to place reliance on pleomorphism of infecting organisms, would wish bacteriologists to believe that the true virus is a filterable stage of the Plotz bacillus, which he describes as a cocco-bacillus. This view has much similarity to that put forward by the same observer in regard to the meningococcus, but recent investigators have disproved Hort's contentions. It is, however, probable that the organism is filterable, and if this be the case Plotz has not found the solution to the riddle.

MESSRS. PARKE, DAVIS AND COMPANY.

In the present issue, Messrs. Parke, Davis and Company publish in their advertisement a word of thanks to the medical profession for the support they have received during the building up of a business which commands the admiration and respect of all. The firm has now completed the first fifty years of its existence, and we desire to offer them our congratulations on their achievements in this long span of time. The great pharmaceutical firms of the world have recognized that reputation must stand on something more substantial than mere industrial prosperity. Science has advanced within the last half of a century, and perhaps the best proof of the progress of the chemical industries is to be sought in the records of the International Congress of Applied Chemistry, held in London in 1909. Recent events in the Commonwealth and in Great Britain have taught us that in the future industry must rely more and more on scientific research and less and less on bland advertisement. We would prefer, if it were possible, if pharmaceutical firms could confine their advertisements to the nature of their preparations without any reference to therapeutic claims, but apparently the time for this has not yet arrived. Care, accuracy and ingenuity in production, and originality in the preparation of new products, are the qualities necessary for the satisfaction of the modern pharmacologist. These qualities are to be found in the programme of Messrs. Parke, Davis and Company. We trust that they may long enjoy the confidence of the medical profession.

Naval and Military.

The lists of casualties which have been issued during the past fortnight, although long, have not contained the names of any members of the medical profession. It is with regret that we learn from the 242nd list, issued on November 10, 1916, that Major C. Yeatman is ill in hospital.

It has been announced that Captain W. M. Stewart, the son of Dr. Stewart, of Adelaide, has died of wounds.

Captain Douglas D. Jamieson, A.A.M.C., has been awarded the Military Cross for conspicuous bravery and devotion to duty during the fighting at Romani and Bir-el-Abd in August, 1916.

AN EXEMPTION CLAIM.

The Exemption Court for the Military District of Toowoomba dealt, on November 6, 1916, with a claim for exemption from military service lodged by Dr. M. Lane. The application was based on the contention that the work of Medical Officer to the Hibernian Society was of national importance. From the evidence given it appears that Dr. Lane had been engaged by the Hibernian Society to come from England to Queensland for the purpose of looking after the members of the Society. After he had been in Toowoomba for about six months, he entered into partnership with Dr. H. J. Windsor. Between them they attended to 500 members and their dependents. It was claimed that the contract compelled Dr. Lane to continue in attendance on these persons. In addition the partners had a large private practice, and the applicant was honorary surgeon at the Toowoomba Hospital and at the Maternity Hospital. Evidence was given to the effect that much difficulty would be experienced in securing the services of a substitute for Dr. Lane.

The witness speaking for the military authority pointed out that there was an urgent need for medical assistance at the camps. If Dr. Lane responded to the call he would be used for this purpose. If he obtained long exemption it was just possible that he would have to enrol at a later date in another capacity.

In coming to the conclusion that the applicant was entitled only to temporary exemption, the Magistrate held that as Dr. Lane's position at the hospital was an honorary one, he could not claim that the work was of national importance. He admitted that the position in connexion with the Hibernian Society was an unfortunate one, but he thought that if a short time were granted, a substitute could be secured. Exemption was granted until the end of January.

Abstracts from Current Medical Literature.

THERAPEUTICS.

(177) Peripheral Neuritis after Emetin.

A. R. Kilgore (*Boston Medical and Surgical Journal*, September, 1916) states that three main by-effects follow the use of emetin hydrochloride when used in single large dose or in moderate doses over a considerable time. These effects are dizziness or nausea, or both, coming on almost immediately after injection, diarrhœa and peripheral neuritis. Seven histories of patients exhibiting neuritis are recorded. All these cases occurred in China, but only one patient was a Chinese. The symptoms usually observed in these cases after emetin are general muscular pain and weakness becoming most pronounced in the legs. Hyperæsthesia of the soles of the feet may be observed. The neuritic symptoms often commence after the course of emetin has been completed and may increase for some time without any further administration of the drug. The total quantity of emetin needed to incite neuritis varies considerably. In a series of cases the amounts varied from .4 grains to 21 grains. On the other hand many patients receive greater amounts without showing any signs of this affection. The records of the Shanghai Hospital show patients who have taken 12 to 21 grains without untoward symptoms. The prognosis in this condition is good. The symptoms ameliorate after several weeks, and finally disappear entirely. The author has administered emetin to dogs, and has succeeded in producing paresis of the hind limbs in one dog. The experimental study will be continued.

(178) Peripheral Action of the Alkaloids of Opium.

D. I. Macht, S. L. Johnson and H. J. Bollinger have made a quantitative study of the analgesia produced by the topical action of the alkaloids of opium individually and in combination with each other (*Journ. of Pharmacology and Exper. Therapeutics*, August, 1916). The method employed depends on the production of finely graded pain stimuli by means of a large induction coil. The normal sensory thresholds for different spots on the back of the hands, on the lips, and on the tongue have been measured. The values for these stimuli have been found constant under the same conditions. The drug is applied to the surface for a definite number of minutes, usually from one to three, and the sensory threshold again measured. According as the result has been higher or lower than the normal, an analgesic or hyperalgesic action of the drug has been inferred. As a control cocaine has been used to estimate the degree of the effect. The various alkaloids from opium all exert a measurable action on the terminations of the sensory nerves. In descending order of efficiency these alkaloids may be arranged as follows: papaverine, narcotine, morphine, narceine, codeine and thebaine. A combination of the total alkaloids of opium, known as pantopon, has been found to be more effective than the sum of their individual effects. From this it follows that these different alkaloids potentiate each other.

(179) Magnesium Sulphate in Delirium Tremens.

E. A. Leonard (*Journ. Amer. Med. Assoc.*, August 12, 1916) has prepared a preliminary report based on the study of 12 cases of delirium tremens occurring in the Philadelphia General Hospital. In these cases lumbar puncture was performed and varying quantities of cerebral spinal fluid were removed, according to the amount of pressure found. The amount taken away varied from 10 to 40 c.cm. One cubic centimetre of a 25% solution of magnesium sulphate was injected into the spinal canal for each 25 pounds of body-weight. The solution was given with the patient in a sitting posture. After the introduction was completed the patient was turned into a semi-recumbent position. No patient received a second injection. Ten patients recovered and two died. Detailed histories are given of three cases. Seven of the 12 patients showed a paraplegic condition one to two hours after the injection of the magnesium sulphate. The knee-jerks and plantar reflexes were absent, and both sphincters were relaxed. Function partially returned in 12 hours, with a gradual return of the reflexes and motor power. The reflexes were not normal until the third day after the injection. The remaining five patients had weakness in their lower limbs, with diminished reflexes. These patients suffered from retention of urine. The temperature rose from 1° to 3° F., and the respiration became more rapid and shallow. The rapidity with which the delirium and restlessness subsided, with restoration to the normal within 24 hours following this treatment, is considered of value, in view of the little good that sedatives do to these cases in which the mortality is so high.

(180) Sero-therapy in Poliomyelitis.

Simon Flexner contributes a note on the possibilities of the treatment of infantile paralysis by immune serum (*Journ. Amer. Med. Association*, August, 19, 1916). He recapitulates briefly the evidence in favour of the belief that the exhibition of the immune serum from a person who has recovered from the disease will prevent the onset of paralysis in a case of poliomyelitis if administered in the pre-paralytic stage, and will arrest the progress of the paralysis in a case in which some paralysis has occurred. He advises that the serum be given by intra-dural injection in the lumbar region. A suitable quantity of cerebro-spinal fluid should be withdrawn before injecting the serum, which should be introduced slowly. He does not think it necessary to inactivate the serum. In choosing the person to serve as donor of the immune serum care should be exercised that other diseased conditions are absent. Flexner considers that a Wassermann test should be applied in all such cases. Although there appears to be no reason against taking serum from a person who has suffered from poliomyelitis several or even many years previously, the author would prefer to use persons who had recently recovered from the disease. He is of opinion that the concentration of antibodies in the blood of these persons will be greater.

(181) Trichinosis Cured by Sero-therapy.

B. J. Salzer has made a number of observations on trichinosis during an epidemic, in which fourteen cases came under his care at Far Rockaway, N.Y. (*Journ. Amer. Med. Association*, August, 1916). Trichinæ have been found in the tissue of the brain of a patient, and rabbits have been infected by eating this brain. Rabbits fed with infected material have developed trichinosis. The injection into these rabbits of serum from patients who had recovered from an attack of trichinosis cured the disease. Rabbits which had received injections of the serum of convalescent patients do not develope the disease if fed with infected material after the lapse of twenty-four hours from the injection. Some animals fed with infected meat on the same day that they have received the injection of serum have been infected with the disease. Meat infected with trichinæ, but mixed with the serum of convalescent patients, does not induce experimental trichinosis in animals. The administration of the serum is followed by the rapid disappearance of the characteristic eosinophilia. Two patients in the active stage of the disease have been treated with the serum from persons who had recovered. The temperature fell quickly after six hours, and remained normal after forty-eight hours. The eosinophilia commenced to diminish in six hours. A secondary rise occurred after twenty-four hours, with a return to normal figures in forty-eight hours. Normal serum and salvarsanized serum were employed earlier in the epidemic, but these had no curative value. The milk of a patient who was lactating contained abundant trichinæ, and a piece of excised mammary gland from the same patient contained many of the worms.

UROLOGY.

(182) Carcinoma of the Penis.

S. C. McCoy (*Urolog. and Cutan. Review*, September, 1916) discusses the various forms of malignant disease of the penis, and especially carcinoma. He points out that malignant neoplasms usually occur in the uncircumcized, and may be either primary or secondary. The most frequent growth is epithelioma. Both carcinoma and sarcoma usually develope after the

age of 50 years, but they are met with in infancy. Epitheliomata are classified as (i.) papillary neoplasms, (ii.) carcinomatous ulcers, and (iii.) non-papillary carcinomatous tumours. The growth begins as a wart, or warty excrescence, a small indurated nodule beneath the mucosal surface, an ulcer from "chancroid," a cicatrix, or a preputial fissure. It rarely developes by direct extension from the scrotum or urethra. The extension may occur through the continuity of growth, through the vascular system, or through the lymphatic channels. As a rule the inguinal lymphatics are implicated early, and more distant glands become involved later. Accurate early diagnosis is essential for cure by surgical means. Pain is an inconstant symptom, and only becomes constant and severe in the late stage. The base of a malignant neoplasm is invariably indurated and elevated, and ulceration is always present sooner or later. Carcinoma involves the more superficial structures of the organ, and nearly always follows a benign lesion. Sarcoma, on the other hand, involves the *corpora cavernosa*, or the *corpus spongiosum*. The differential diagnosis has to be made from *verruca acuminata*, ulcerated chancres, gummata, phagedænic chancroid, ulcerative, phlegmonous, tubercular or gangrenous balano-posthitis, lipomata, fibromata and angiomyomata. In regard to treatment he dismisses radium, X-rays, electro-cautery, colloidal metals and various external preparations with a few words. Operative treatment may be by amputation, or by complete extirpation. The author cites a case of somewhat unusual type. The growth developed in a preputial sebaceous gland. The operation included the complete removal of the infiltrated glands and inguinal fatty tissues as well as the penis.

(183) Uræmia.

N. B. Foster (*Journ. Amer. Med. Assoc.*, September 23, 1916) analyses the essence of the conditions included in the term "uræmia" and distinguishes three distinct types. Bright's contention that an accumulation of urea in the blood caused a symptoms complex has been disproved. The author has studied three persons in whom the only functionating kidney was removed surgically. In these cases anuria resulted. There was therefore a retention of all the substances normally excreted through the kidney. There were no convulsions, no nervous phenomena, and gastro-intestinal disturbances only appeared when the patients were *in extremis*. No characteristic symptoms developed for eight days, and then increasing stupor set in just before death. Similar experience is made when the ureters and the renal arteries are ligatured in dogs, and also in mercuric chloride poisoning in human beings. The author therefore regards this type of true urinary poisoning as practically symptomless. When the retention is not complete the cells acquire some degree of tolerance, and consequently the patient may live for a considerable time after complete anuria is established. In chronic nephritis (granular kidney) the excretion of nitrogen may be reduced from 1.5 grammes per 100 c.cm of urine to 0.6 gramme per 100 c.cm. In order for the body to get rid of 15 grammes of nitrogen the quantity of urine must be increased from a litre to 2½ litres. The increase of fluid imposes an extra strain on the heart, and when the heart fails the quantity of urine excreted by the kidneys is necessarily diminished, and with it the amount of nitrogen. In pure cardiac disease the kidneys can accommodate themselves to the condition by forming a concentrated urine. In renal disease this cannot be accomplished. The nitrogen retention is a slow process in this form of nephritis, and the clinical manifestations are stupor, asthenia and anorexia, with a varying degree of œdema. When the type is pure symptoms indicative of irritation in the motor centres are not seen. The clinical manifestations of the large white kidney are chiefly related to a disturbance of the excretion of water and salts. They include anasarca, but the excretion of urea and of other nitrogen fractions remains normal. There is during the last stages of this condition vomiting, headache, stupor, amaurosis and finally coma. Convulsions are never met with. Pathologically, this type is characterized by an œdema of the brain. The author also deals with the type which arises as a result of the absorption of a toxin. In certain cases of nephritis the blood contains a chemical body which contains nitrogen, and which is probably a katabolic product. The author has separated a crystalline substance from the blood of these cases. This substance proved to be highly toxic to guineapigs. It is not present in normal blood or in the blood of a person in whom complete anuria was due to the removal of the only functionating kidney. The symptoms produced by the injection of this substance are dyspnœa, fæcal discharge, convulsions, coma and death. In conclusion the author finds that pure examples of these three types are rarely met with in clinical practice. Uræmia is usually a complex picture, resulting from a mixture of physiological defects. The clinical aspect is determined by the type which is predominant.

(184) Surgical Treatment of Acute Epididymitis.

C. M. McKenna advocates operative treatment in acute appendicitis for the relief of excruciating pain (*Urologic and Cutaneous Review*, June, 1916). He points out that all the fascias between the skin and *tunica vaginalis* are subjected to great tension in acute epididymitis, as a result of the accumulation of fluid around the testicle. At times the tension is so great that a crackling noise is heard when the fascias are divided with a scalpel The author finds that if the fascias are divided without separating one from another and freeing the *tunica vaginalis* the relief of pain is only temporary. He is also of opinion that opening the epididymis is not more likely to produce impotence than conservative treatment. He reminds his readers that the epididymis is merely a canal or tube made up of transverse chambers. In epididymis it is quite easy to puncture the posterior wall of the affected chamber after exposure by careful dissection without inflicting injury on the small tubules coming off from the testicle. He records eleven cases in which he applied operative treatment. In four he cut down on the epididymis and inserted a gutta percha drain into the lumen. In four other cases the different layers of fascia were divided from one another and the epididymis was drained. In two cases the fascias were separated, but the epididymis was not punctured for two days. In the eleventh case the incision was made on the opposite side, to allow the fluid to escape from the *tunica vaginalis*. The results in the second series of four cases were the best. He warns against making a blind stab without exposing the organ. It is not necessary to split the entire epididymis.

(185) Unilateral Symptomless Hæmaturia.

In dealing with the pathology and ætiology of unilateral symptomless hæmaturia, R. L. Payne and W. B. MacNider object strongly to the use of the word "essential," as this is misleading. (*Journ. Amer. Med. Assoc.*, September 23, 1915). They exclude from consideration hæmaturia due to stone, tuberculosis, new growths and hydronephrosis. They were in a position to study eleven human cases, and six cases of experimental hæmaturia. In the first eight human beings, nephrotomy was performed, and while their findings appeared to coincide with those discovered by other observers, they had no direct evidence of the lesions giving rise to the bleeding. In three cases nephrectomy was carried out, and they were then able to investigate the histological changes minutely. The lesions observed corresponded closely to those in their experimental animals. These lesions are confined to the medulla of the organ, and appear to be of an infective nature. They adduce evidence to show that the infections are localized to foci in the medulla, and that there is no spread beyond the corticomedullary junction. Dense masses of connective tissue form during the process of repair. The fibrosis is capable of producing an obstruction to the venous return from the medulla and papillæ through the venulæ recta. Varicosities develope just under the epithelium covering the papillæ, and rupture through the free surface They also deal with the treatment of this condition and point out that neither nephropexy nor decapsulation can be recommended as a rational method of combating the lesions discovered. They indicate the defects in treatment by nephrotomy, and in advocating nephrectomy, they point out that this operation enables the surgeon to verify his diagnosis and to exclude new growths, tuberculosis, etc.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch was held at the Medical Society Hall, East Melbourne, on October 4, 1916, Dr. A. V. M. Anderson, the President, in the chair.

Dr. G. A. Syme begged leave, before the business of the meeting was proceeded with, to refer to the death of Dr. John B. Murphy, of Chicago. He moved: "That the Victorian Branch of the British Medical Association place on record the sense of loss the profession all over the world had sustained by the death of Dr. Murphy, and its appreciation of his great services in advancing the science and art in surgery." He said that he had met Dr. Murphy at the International Congress of Medicine at Buda Pest, in 1909. Dr. Murphy delivered an address on "Joint and Bone Surgery," at this Congress, and at its conclusion had received an ovation such as was accorded to no other man of the Congress. Mr. Syme had also seen his work in Chicago. He had been extremely impressed by the personality of the man, his extreme excellence as a teacher, and the originality of his work. He was a general surgeon, in contrast to Sir Victor Horsley, who was a specialist. He was as much at home in one department of surgery as in another. He had made very important contributions to more than one special department, such as the surgery of the lung, that of the blood vessels and the nerves, and that of bones and joints. He had introduced arthroplasty, and the Murphy button would be a means of keeping his name fresh in the memory of surgeons throughout the world.

Dr. T. P. Dunhill seconded the motion, which was carried.

Dr. R. O. Douglas presented a patient who had recovered after operation for acute hydrocephalus following epidemic cerebro-spinal meningitis, and read his notes on the case (see page 430).

Dr. R. R. Stawell congratulated Dr. Douglas on the successful result in a seemingly hopeless case. He thought that the profession could congratulate itself on the progress achieved by its young members in connexion with this disease. Dr. Douglas's work at Bendigo would be of great value and of world-wide interest. Dr. Stawell referred with pleasure to the assistance he had obtained from Dr. Douglas in the treatment of cases of cerebro-spinal fever at the Melbourne Hospital. The name of Douglas, together with those of Fairley and Stewart, would be remembered in connexion with the best work hitherto carried out in Victoria.

Dr. S. V. Sewell had seen Dr. Douglas's work at Bendigo, and at one time had been inclined to think that the Bendigo cases were mild in comparison with those in Melbourne. After having seen his work at the Melbourne Hospital, he had come to the conclusion that the Bendigo cases were not mild, but that the results obtained were due to the masterly way in which they were watched, and in which action was taken when necessary, and withheld when not necessary.

Dr. A. V. M. Anderson added his congratulations. His own experience of trephining had not been a happy one. In his cases the operation was apparently successful at first, but the patients relapsed later, and then died.

Dr. H. Douglas Stephens read a paper on "Poliomyelitis: its Epidemiology, Pathology and Symptomatology." (See page 423).

Dr. A. Jeffreys Wood read a paper on the "Diagnosis, Prophylaxis and Medical Treatment of Acute Poliomyelitis." (See page 426).

Dr. W. Kent Hughes read a paper on the "Surgical Treatment of Anterior Poliomyelitis," and illustrated it by lantern slides, depicting deformities of methods of operation. (See page 429).

MEDICO-POLITICAL.

The President, Dr. A. V. M. Anderson, summarized the general provisions of the Venereal Diseases Bill then before the Legislative Council, and more particularly those which might interfere with the privileges of medical practitioners. He informed the members that at a special meeting of the Council it was determined to ask the Minister of Public Health to receive a deputation. The interview had taken place that afternoon, and the Minister had given a sympathetic reply to their representatives.

Medical Societies.

(Affiliated with the British Medical Association.)

NORTHERN SUBURBS MEDICAL ASSOCIATION.

A special meeting of the Northern Suburbs Medical Association (New South Wales) was held at the B.M.A. Building, 30-34 Elizabeth Street, Sydney, on November 11, 1916, Dr. H. Z. Throsby, the President, in the chair.

In opening the proceedings, the President said that the meeting had been arranged for the purpose of considering whether every member should be called upon to join the Army Medical Corps Reserve. Those members who had been carrying out the examination of recruits for the military authority had received an invitation from the Principal Medical Officer to join the Reserve. Many men had been somewhat suspicious of this circular. They were nervous lest once they were in the Reserve they might be sent abroad or placed in camp for six months or longer. He was convinced that every one was anxious to do the right thing. Perhaps there might be some way in which medical practitioners could help in Australia by giving their services to the civil population without joining the Reserve. Colonel Stokes had kindly consented to explain the position to them that evening. Possibly he might give them some form of guarantee that, if they acceded to his request, they would not be taken away from their practices without consideration being given to their circumstances.

Colonel E. S. Stokes, the Principal Medical Officer of the 2nd Military District, was greeted with cheers on rising. He thanked the members for having given him an opportunity of speaking to them. He would attempt to help them. If they had difficulties he might be able to assist them to solve them, or to get rid of them altogether. He recognized the doubts which oppressed the minds of medical practitioners at this crisis. There was no question of doing anything for the Defence Department or for any military authority. What they had to consider was that this was a supreme hour of trial of the Empire, and everyone should subordinate personal convenience and comfort to their duty to their country. He was convinced that all members were actuated by loyalty, and that all were ready to do what lay in their power.

But when they came to bedrock and attempted to ascertain what they could do and how they could do it, doubts and fears arose. They feared to put their heads into the lion's mouth, lest the lion nipped it off. He assured them that that fear was practically unwarranted. He proposed to indicate to them the kind of work that had to be done by the members of the medical profession in this momentous peril to the Empire.

In the first place, what had the profession in New South Wales done so far? Over 300 had left the State since the beginning of the war. He assumed that the total number of medical practitioners was something like 1,200. Some of the men had been away for over two years. Some had been killed, some had died, some had been ruined in health and numbers had been hit very heavily in the pocket. What was the remaining 75% going to do? Were they prepared to come forward and replace those who were nearly worn out?

He would pause to consider the present needs and the future needs. It was difficult, perhaps impossible, for him, or indeed for any one in the Commonwealth, to know exactly what these were. They depended on what the conditions at the front were. On the basis of their past experience, he estimated that New South Wales would be required to supply 100 medical men for the front each year. The bulk of this hundred would be enlisted from the graduates fresh from the University. He was hopeful that 60, or even 70, would be forthcoming from the Medical School. So far, he had had no difficulty in obtaining the balance of the number required. He was hopeful that he would have offers from a sufficient number of men in practice to cover his needs in the future. He had no grave doubts on this score.

In the next place, he dealt with the work to be done at home. There was the work in the camps, the work in the hospitals and the work of examining recruits, serving on medical boards and the like. For the service in camp and hospital he required 50 men. There was no extreme difficulty in finding these men. At times he had experienced rushes, and then there had been a tight squeeze. If the present scheme were to continue, and he knew of nothing that indicated that it would not, he would have to find these men in the future. It had been laid down that all medical men doing work for the military must hold commissions in the Australian Army Medical Corps.

He thought that a few words on the various branches of the Australian Army Medical Corps would be in place, in order that the members might obtain a better understanding of the position. There were five branches. There was the permanent service, which contained but very few men. The second branch was the Militia. Prior to the war, the number of medical officers in the Militia was under 100. Third came the Reserve, fourth the Unattached List and fifth the Retired List. There was at present in addition, during the continuance of the war, the Australian Imperial Force. The men in the five branches enumerated were not in the Australian Imperial Force. When war broke out, all, or nearly all, the men in the Militia, in the Reserve, in the permanent service and on the two lists, were mobilized. It was very greatly to the credit of the men in the Militia that every one of them had volunteered for service in the Australian Imperial Forces at the outbreak of war. Nearly all these men were general practitioners. They were torn from their practices at a moment's notice. These men had made enormous sacrifices, and many were ill able to stand it. It would be a fair thing if those men could be relieved by others who had so far never given a thought to the proposal that they should leave our shores.

Turning to the Reserves, he pointed out that, in time of peace, it was composed of men who had no duties and did nothing. In time of war they were liable to be mobilized for duty within the Commonwealth, but could not be sent abroad unless they offered themselves voluntarily. Formerly, officers in the Reserve could not even have been used for home service unless they volunteered; but this had been changed. Colonel Stokes emphasized the point that if every medical man in the State were to join, the amount of work which any one man would be called upon to perform would be very small indeed. Consideration would always be shown to men with special obligations, and civil practice would be disturbed as little as possible. He was prepared to arrange with any man, according to what he could do and to what he was doing. In recommending every medical practitioner in New South Wales to join the Reserve, he expressed the opinion that this would not involve any hardship on anyone. He could not guarantee what might happen in the future; but then he could not guarantee what might happen to the men if they did not join.

If the whole community were enrolled, medical practitioners who did not hold a commission would not be exempted, and there would be a great risk of them being put in the ranks as privates. He reminded the members that, under the provisions of the Defence Act, all males up to the age of 60 were liable for service in the Citizen Forces. Those who were in the Australian Army Medical Corps would be given medical work to do, but the others might be compelled to learn the goose-step. In conclusion, Colonel Stokes expressed his willingness to elaborate any points should the position not be clear in the minds of the members.

Dr. F. W. Doak asked whether men joining the Reserve would be liable to be used for service abroad. He also wished to know what rank these men would bear.

Colonel Stokes explained that no man in the Reserve could be sent abroad unless he volunteered to go. Reserve medical officers would be Honorary Captains.

Sir Thomas Anderson Stuart referred to the limited powers of the District Medical Committee, of which he was a member. He considered that these powers should be extended, and intimated that an endeavour was being made with this end in view. He considered that it was very unfair to the men who had been called upon to go to the front at the beginning of hostilities that they should not be relieved. He was of opinion that men should be able to go away for a limited period. As long as the majority did not go, this would be a just arrangement. If all men were to go, he would advocate that the term of service should be for the duration of the war. He felt that there was no satisfaction in the profession, because matters were not equitably adjusted. If the profession were properly organized, the disabilities under which some suffered would be removed, and general satisfaction would result. The need for the present meeting was caused by this unsatisfactory state of affairs.

Dr. E. A. R. Bligh had found that many men had misunderstood the position. If all the members of the profession in New South Wales would act as Colonel Stokes had suggested, the burdens of those at the front would be greatly lightened. He recognized that some men might be in a position to go to the front for a year, but, owing to their obligations, could not go for longer. He made the suggestion that two or more men in practice in one district might be bracketted together on applying for a commission in the Australian Imperial Forces, so that the military authorities might call upon one for a time and subsequently release this one and call on the second. In this way each man could serve his country and at the same time his patients in civil practice would not be neglected.

Colonel Stokes informed Dr. Bligh that he was acting on this plan when men in partnership or in country districts placed their services at the disposal of the country.

Dr. D. Kelly registered an emphatic protest against the official instructions which had been issued to the Referee Boards. They had been told to pass recruits with two sound legs and two sound arms. He would not prostitute himself to such gross unfairness. A man with a hernia or some abdominal defect was not fit to be enrolled, and he objected strongly to be told what constituted fitness and what the authority was prepared to pass. It was unfair to the recruit. In his opinion, no one should be asked to serve on a board to carry out work in the manner suggested in the instructions.

He had offered his services, and he was still prepared to do the right thing. But he felt that the position was invidious. If he went to the front his house surgeon would have the same rank as he would have, and might be his senior officer. The young man just qualified was quite well off with the pay if a Captain, but the senior man, who through years of hard work had built up a good practice, and was making from £2000 to £4000 a year, should not be asked to hold the same rank and draw the same pay. His financial obligations were greater, and the speaker claimed that he should be given his majority at least. Colonel Stokes had told them that if they refused to join the Reserve they were incurring the risk of being called up for service with the combatant forces. He was inclined to prefer this course, for as a private he would be under a lieutenant who knew his work better than the private did. Moreover he held that a senior man should be given plenty of warning before he was called upon to go away. He suggested that three months' warning should be given.

Dr. David Thomas delivered a mild reproof to the last speaker. He pointed out that whatever they did as a profession, they did not do it from a business point of view. He, and he believed Dr. Doak, had entertained a similar feeling to that expressed by Dr. Kelly, when they joined the service on the other side. They were given commissions as lieutenants. But after a time they had come to realize that the position of the military authorities was a difficult one, and that it was practically impossible for them to distinguish between the men joining. Save under exceptional circumstances, everyone in the Royal Army Medical Corps was given the rank of 2nd lieutenant. Dr. Thomas was sure that it would facilitate the work of the authorities if all men would join the Reserve, and the work of the organization of the profession would be furthered. In regard to the question of temporary service, he stated that the experience of those who had served in the Royal Army Medical Corps and in the Australian Army Medical Corps was that many necessary duties could not be learned quickly, and that the service suffered when men were allowed to return after a short spell. He was convinced that an efficient service could only be secured if the men were prepared to see the affair

through. He regretted that circumstances had prevented him from remaining at his post in the old country.

Dr. F. W. Doak urged his colleagues to put aside all ideas of personal aggrandizement or of financial reward. Everyone who was prepared to do his duty could do good work. Although his rank had been but lieutenant, he had never found any real disadvantage and had often been assisted in surgical work by men holding senior rank. He expressed his intention to join the Reserve. He would be willing to do what was required of him.

Dr. R. O. Williams, of the Central Southern Medical Association, wished to know whether men joining would be given any notice. They might be mobilized in any part of the Commonwealth. The length of the notice would be a matter of importance. He felt that if he were taken twenty miles from his district he might just as well go to the front. In fact he would prefer to go away rather than be mobilized away from his practice. He informed the meeting that the Central Southern Medical Association would discuss this matter shortly at a meeting, and would attempt to come to some arrangement whereby more men might be released from practice to proceed to the front.

Colonel Stokes explained that it would probably not be necessary to mobilize for whole-time work members of the Reserve in country towns, whose services could be most advantageously used for local requirements, such as the examination of recruits, etc. At times when he wanted to get a man examined in country districts, he had to send men from Sydney to do this, because none of the local practitioners were in the Reserve. If everyone were serving in the Reserve, this work could be undertaken without any disturbance of the men's work.

Dr. A. S. Vallack considered that the main object of the resolution which would be passed was to prevent overlapping. He regretted that the matter had not been taken up by the New South Wales Branch as a whole, instead of by the local Association. He considered that a resolution of the Branch would carry more weight.

Captain E. M. Humphery disagreed. He favoured the idea that the Northern Suburbs Medical Association should take the matter up and pass a resolution. The other local Associations would then be stimulated to follow suit, and the result would be an expression of opinion from every part of the State. This would be preferable to an expression of opinion from the Sydney men who attended the meetings of the Branch.

Dr. R. W. Young, President of the South Sydney Medical Association, intimated that his Association would hold a meeting for the same purpose shortly.

Dr. R. H. Todd, honorary secretary of the New South Wales Branch, congratulated the officers of the Northern Suburbs Medical Association for their spirit in tackling this subject. He had come to the conclusion that some men did not appear to realize that this country was at war. He held that the nation's needs must come first, and everyone should be prepared to assist. He would have been at the front himself long since had his age and physical condition permitted it. As it was he had done what he could to assist the Defence Department in the difficult tasks that had to be accomplished. The remedy, he felt sure, for the difficulties was in a voluntary or compulsory enlistment of all. The question of calling on the members to join in a body had long been in his mind, but before the question of compulsory service had been brought up, he had felt that the time had not arrived. But now it had all been changed and he was of opinion that that time had arrived. He hoped that the powers of the District Medical Committees would be extended, and that the profession would have every confidence in these bodies. In some districts the men knew each other well and trusted each other, and there was no difficulty. In others there was distrust and practitioners feared to go away because they did not know what would become of their practices. A better organization of the profession by a committee which commanded the confidence of the members would dissipate these disabilities. He considered that the right course had been adopted by the Northern Suburbs Medical Association, and that it was better for this matter to be discussed all over the State at meetings of the local Medical Associations than at one large meeting in Sydney. Had the reply to the referendum been "Yes," local medical committees would have been set up throughout the State. In all probability the committees of the local Associations would have acted as these local committees. Since the answer was the other way, it became the duty of the local Associations to undertake the organization work voluntarily.

Dr. L. W. Harvey moved:—

> That every member of the Northern Suburbs Medical Association be invited to apply for a Commission in the Australian Army Medical Corps Reserve.

The motion was seconded by Dr. C. Nigel Smith.

Dr. E. A. R. Bligh moved an amendment as follows:—

> That the following resolution be sent to the Council of the New South Wales Branch of the British Medical Association:—
>
> > That this Association considers that all members of the New South Wales Branch should be requested to apply for a Commission in the Australian Army Medical Corps Reserve.

The amendment was seconded by Dr. Andrew Davidson. After a few other members had expressed their opinions, the amendment was put to the meeting and carried, and was also carried as a substantive motion.

A cordial vote of thanks was accorded to Colonel E. S. Stokes, the Principal Medical Officer, for having attended the meeting and addressed the members.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A meeting of the Senate of the University was held at University Chambers, Phillip Street, Sydney, on November 6, 1916.

The following degrees were conferred *in absentia*:—

Master of Arts: T. R. Mallett.

Bachelor of Arts: A. E. H. Cooper, J. Morgan, K. B. Roseby, K. C. Small.

Bachelor of Economics: J. F. Millerd.

Bachelor of Meddicine and Master of Surgery: E. S. Smalpage.

Bachelor of Science: J. J. Forster.

Bachelor of Engineering: H. G. Murray.

Dr. Constance D'Arcy and Mrs. H. E. Barff were reappointed representatives of the Senate on the Board of Directors of the Sydney University Women's Union.

On the recommendation of the Dean of the Faculty of Medicine, the following were appointed examiners for the Final Degree Examination:—

Medicine: Dr. A. E. Mills and Dr. Cecil Purser.

Surgery: Dr. F. P. Sandes and Sir Alexander MacCormick.

Gynæcology: Dr. J. Foreman and Dr. G. Armstrong.

Obstetrics: Dr. F. Barrington and Dr. S. H. MacCulloch.

Clinical Medicine: Dr. G. E. Rennie, Dr. Macdonald Gill, Dr. Sinclair Gillies and Dr. E. J. Jenkins.

Clinical Surgery: Dr. G. H. Abbott, Dr. R. Gordon Craig, Dr. J. Morton and Sir H. L. Maitland.

The following recommendation, contained in a report of the Faculty of Science, was adopted: That a short course of 20 lectures on "Industrial Management" be included in the curriculum of the fourth year in the Department of Engineering.

Sir Thomas Anderson Stuart, Dean of the Faculty of Medicine, presented a letter from a high official of the Army Medical Corps in regard to the work and capabilities of the young Australian Medical graduates who had been sent to join the Royal Army Medical Corps during the previous two years. These young medical men had gained the reputation of being the very best juniors on active service. Every Commanding Officer under whom they had served had reported on their work in most laudatory terms, and had repeatedly asked to have more of them sent to their units. The "young Australian medical men" had proved themselves, without exception, extremely good and capable, not only at their professional work, but by their adaptability, and by their willingness to go wherever ordered without demur. They had been a valuable addition to the Royal Army Medical Corps. The high commendation that they had received was regarded as most flattering to the

Australian Universities and to the Medical Officers themselves.

The Senate received the letter with much satisfaction, as it dealt with the success of those graduates whose courses had been accelerated so that they might proceed immediately to active service. Some of those referred to in the letter had left Australia for duty within a few days of receiving their degrees.

Public Health.

THE HEALTH OF VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending November 5, 1916:—

	Metropolitan. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Diphtheria	61	2	22	0	83	2
Scarlatina	22	0	10	0	32	0
Enteric Fever	2	0	6	0	8	0
Pulmonary Tuberculosis	23	12	12	9	35	21
C'bro-Spinal Meningitis	2	—	1	—	3	—

THE HEALTH OF SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, South Australia, during the week ending October 28, 1916:—

Disease.	Adelaide. Cs.	Dths.	Rest of State. Cs.	Dths.	Totals. Cs.	Dths.
Morbilli	26	0	46	0	72	0
Pertussis	5	0	41	0	46	0
Diphtheria	1	0	18	0	19	0
Pulmonary Tuberculosis	2	2	8	4	10	6
Scarlatina	1	0	4	0	5	0
Enteric Fever	0	1	0	0	0	1
Cerebro-spinal Meningitis	0	0	1	1	1	1
Erysipelas	0	0	2	0	2	0

THE HEALTH OF WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health during the three weeks ending November 4, 1916:—

Disease.	Metropolitan. Cases.	Rest of State. Cases.	Totals. Cases.
Enteric Fever	6	1	7
Diphtheria	24	10	34
Scarlatina	3	3	6
Pulmonary Tuberculosis	17	7	24
Cerebro-spinal Meningitis	5	1	6
Septicæmia	0	1	1
Bilharzia Hæmatobia	2	0	2

THE HEALTH OF TASMANIA.

The following notifications have been received by the Department of Public Health, Tasmania, during the week ending November 4, 1916:—

Disease.	Hobart. Cases.	Launceston. Cases.	Country. Cases.	Whole State. Cases.
Diphtheria	6	0	5	11
Pulmonary Tuberculosis	4	1	4	9
Scarlatina	2	0	4	6
Puerperal Fever	0	0	1	1
Ophthalmia Neonatorum	0	0	1	1

THE HEALTH OF AUCKLAND.

The following notifications have been received by the District Health Officer, Auckland, New Zealand, for the month of October, 1916:—

Disease.	City. Cases.	Suburbs. Cases.	Country Districts. Cases.	Total. Cases.
Scarlatina	8	14	31	53
Diphtheria	12	10	39	61
Enteric Fever	3	1	51	55
Pulmonary Tuberculosis	9	5	10	24
Septicæmia	4	1	1	6
Cerebro-spinal Meningitis	0	0	6	6

INEBRIETY IN VICTORIA.

Dr. W. Ernest Jones, Inspector of Inebriate Institutions of Victoria, has issued his report for the year 1915. There are two institutions in which inebriates are dealt with—*Lara* and *Brightside*. The Inspector recognizes that the number of persons admitted into these institutions is not necessarily an index to the frequency of excessive drinking. He suggests, however, that these figures taken together with the police records and the statistics of the Penal Department and of the Hospitals for the Insane may be of use for this purpose. The number of convictions for drunkenness during 1915 was 7,086. In 1914 it was 7,387 and in 1913 it was 7,676. The figures for 1910, 1911 and 1912 were 7,272, 7,557 and 7,446. While there is no overlooking the fact that the numbers have decreased during the past three years, it must be recognized that the decrease during the past year represented approximately 4%, that the decrease from the maximum number was only 8%, and that the decrease from the mean of the past six years was about 4½%. The number of admissions to the two institutions was 134, as against 203 for 1914 and 167 in 1913. The mean number of admissions for the six years 1910 to 1915 was 28 more than the number for 1915. He also points out that 36 of the persons admitted during the year had previously been in the institutions, and that the incidence of relapses was higher than in former years. He suggests that enlistment into the expeditionary forces may have contributed to the decrease, and admits that part of this result should be attributed to the restriction of the hours during which liquor is sold. He holds the view that greater powers are needed to deal with the delinquent rather than to restrict the liberty of the nation. The abuse of alcohol should be penalized, and not its reasonable use. He regards the habit of morning drinking a great evil, and proposes that bars should not be opened before noon. He favours 8 o'clock closing, as by this time the evening meal is usually over.

Lara.

The total number of persons dealt with during the year was 174. There were 37 remaining in the institution on January 1, 1915, 76 admitted for the first time and 25 readmitted, and 36 remaining on probation. During the year 28 patients were discharged at their own request, 94 were discharged after the efflux of time, and in 3 instances the orders were rescinded. At the end of the year 24 persons were placed on probation. The total number of persons on probation was 124, of whom 87 returned nominally, 13 voluntarily, and 4 compulsorily. Four persons escaped. The ages of the persons admitted during the year were as follows:—There was one patient between 18 and 20, 11 between 20 and 30, 34 between 30 and 40, 35 between 40 and 50, 17 between 50 and 60, and 3 between 60 and 70.

The health of the patients was good. The farming operations were satisfactory, and in addition the patients carried out various useful tasks in the institution and its grounds. The expenditure amounted to £2,797. The income derived from payments made by patients amounted to £670, proceeds of sale, rent of land, etc., amounted to £280.

The patients were recruited from clerical occupations in 15 cases, from artisans and mechanics in 11, from commercial travellers and salesmen in 11, from labourers in 10, from "general" professions in 10, from agents in 9, from publicans in 7, from the legal profession in 6, from storekeepers and tradesmen in 5, from merchants and commercial occupations in 4, from journalists and compositors in 3, from the medical profession in 2, from agricultural pursuits in 2, and from chemists in 1. In 5 cases there was either no occupation or the occupation was not classified. Fifty-four of the inmates had received a college education, 45 had received a "good" education, and 2 had had only an elementary one. There was a family history of inebriety in 80 of the 101 patients and of insanity in 8. In 97 of the patients the inebriety was in regard to alcohol. In 64 there was regular alcoholism, and in 33 periodical alcoholism. Two patients were addicted to morphinism, 1 to cocainism, and 1 to opium smoking. In regard to associated habits, 98 admitted that they smoked. Delirium tremens occurred 38 times. In 14 there was a single attack,

in 5 there were two attacks, in 3 there were three attacks, and in 16 there were four or more attacks. In regard to the exciting causes, sociability is entered 65 times. In 21 instances the influence of occupation is supposed to have acted. Business worry, domestic causes, overwork, injury, bereavement, and cigarette habit are entered as occasional exciting causes. The predisposing causes are said to have been heredity, neurotic temperament and mental defect. Among the complications from which the patients suffered peripheral neuritis occurred 13 times, cirrhosis of the liver in its hypertrophic form occurred 11 times, congestion of the liver occurred 11 times and gastritis occurred 12 times. It appears that 35 of the patients were doing well at the time of the issuing of the report, 17 had not improved, and 6 had improved. The others had either been lost sight of or a sufficient time had not elapsed to enable the medical officer to judge the effect of the treatment. The figures given for the past 8½ years are of greater value in regard to the cure. During this period there were 755 persons under treatment. Of these 67 died. This is equivalent to a mortality of 8.8%. The number of those who had been total abstainers since their discharge was 277. This represents 36.5% of the total number. Under the heading "not improved" there are 202. By improved is meant those who have had slight relapses, but who have benefited considerably. There were 73 of these.

Brightside.

The Matron of Brightside visited England in 1914. The result of her visit had been the introduction of two reforms. In the first place the period of detention has been lengthened. In the Salvation Army Retreat in England the minimum stay is one year, and two years are by no means uncommon. Hitherto the detention in the Brightside institution has been five months. This has been increased to seven months. The second reform is the introduction of a vegetarian diet. The diet consists chiefly of vegetables, fruits and farinaceous foods with a minimum of non-intoxicating stimulants, such as tea. The Salvation Army was induced to increase the accommodation for female inebriates by erecting a building with 24 additional beds. The new building is in the course of construction, and has been planned in accordance with modern requirements.

There were 24 inmates in the Brightside institution on January 1, 1915. During the course of the year 33 individuals were admitted. In 16 cases the patients were admitted for the first time. The total number of persons receiving attendance during the course of the year was 57. Of these 24 were still in the institution on December 31, 1915. Three women were discharged as being unsuitable for the institution, and two escaped. A further four were discharged at the expiration of their period of detention, while 24 were allowed out on probation. Two of the women admitted were under 30, 7 were between 30 and 40, 14 were between 40 and 50, 7 between 50 and 60, 2 were between 60 and 70, and one was over 80. It is stated that four had had a college education, 14 had had a good education, and 15 an elementary one. The occupation of the 33 persons admitted was as follows:—Housewives 14, domestics 7, nurse 1, seamstress 1, school teacher 1, stewardess 1, and no occupation 8. There was a family history of inebriety in 15 cases and of insanity in 12. In 28 of these women there had been regular drinking with periodical breakdowns every few weeks, and in three had been hard drinking all the time. Associated habits were said to be present in 14. In 2 there was cigarette smoking, in 4 there was the taking of sleeping draughts, in 1 there was kleptomania, and in 1 there were immoral habits. The inebriety in two cases took the form of morphinism. Seven of the patients had an attack of the delirium tremens, 4 had two attacks, and 3 had three or more attacks. Among the complicating conditions, insanity is entered once, syphilis once, peripheral nephritis once, renal disease once, and mental defect five times.

The causes are divided as usual into predisposing and exciting. Among the former 13 are said to have acquired the habit "through company," in 9 there was heredity, in 7 trouble and in 2 overwork are blamed, and in 2 the habit is traced to the order of the doctor. Among the exciting causes a craving for alcohol is entered 25 times, trouble 3 times, loneliness and ill-health once each. Of the 57 patients dealt with 24 were still under treatment, and 2 had been discharged too recently for the medical officer to ascertain the effect of the treatment. Of the remaining 31, 13 had been abstainers since their discharge, 4 had improved considerably, and 14 had relapsed.

We notice that in these and other similar statistics the religion of the individuals concerned are set out.

We fail to recognize the significance of these records, for it is reasonably certain that the majority, if not all, of the inmates of an inebriate institution have no religion at all, and it is also doubtful whether the ministers of the various religions named have any control or influence over these people.

Hospitals.

ROYAL PRINCE ALFRED HOSPITAL.

The annual publication of the Royal Prince Alfred Hospital, embodying the annual report of the Board of Directors, which was presented to the Governors and subscribers at their annual meeting on April 10, 1916, and containing a large amount of statistical and other information in connexion with the Hospital, has now been issued.

From the information contained in the report and elsewhere the following has been culled. The total number of beds in the Hospital is 396. On December 31, 1914, there were 370 patients under treatment. During the course of the year 6,683 persons were admitted, and at the end of the year 373 persons were still under treatment. Of the 6,686 persons in whom the treatment was completed 450 had died, 4,134 had been discharged "cured," 1,637 had been discharged "relieved," and 459 had been discharged "unrelieved." The average number of patients in the wards worked out at 379.8, and the average length of stay at 21.57 days. The mortality rate is calculated, after deductions have been made for those who died 24 hours after admission, at 5.38%. Of the patients admitted 513 were readmissions, and 1172 were sent into the wards from the out-patient departments.

All accident and emergency cases were dealt with without reference to the financial position of the patients. In all 4,025 persons were treated without charge, and 2,658 contributed something towards their maintenance. The contributions of the patients in the aggregate amounted to £5,620 1s. 5d. This represents an average contribution of £2 2s. 3½d. per patient. Assuming that the average residence of these 2,658 patients was the same as that of the total number of patients, each if them would have paid about 1s. per diem. The general expenses of the Hospital amount to £6 19s. 8d. per patient, and the cost of food only works out at £1 8d. 2½d.

During the year 1914 the daily average of patients was actually in excess of the number of beds. The Board of Directors recognized the disadvantages of such an arrangement from a financial, as well as from other aspects, and therefore determined that the number of beds occupied should not exceed a daily average of 385. Consequently the amount of work and the number of operations have remained somewhat behind that recorded for the previous year.

Reference is made to the need for increasing the accommodation for patients suffering from contagious diseases. During the year 1915 an outbreak of measles, scarlatina, and diphtheria caused no little anxiety to those responsible for the conduct of the hospital. An isolation block has been planned, but its erection has not yet been started. A certain amount of structural work, chiefly repairs, has been undertaken during the year.

The Honorary Staff.

The active honorary medical staff comprises 40 members. During the year no less than 12 were absent on military service. Several changes resulted from the retirement of Sir Alexander MacCormick from the post of honorary surgeon and of Dr. E. T. Thring from the post of honorary gynæcological surgeon. Dr. F. P. Sandes has been elected

honorary surgeon, Dr. H. C. Taylor Young honorary gynæcological surgeon, and Dr. W. C. Mansfield has been elected honorary surgeon for diseases of the ear, throat and nose in the place of the late Dr. H. Russell Nolan. Sir Alexander MacCormick and Dr. E. T. Thring have been appointed to the honorary consulting staff. Various other temporary appointments have been made.

Twenty members of the resident medical staff have obtained leave of absence, or have resigned to go to the front. The work has consequently been greatly disorganized. In a similar manner the nursing staff has been depleted.

Dr. H. J. Clayton, the Medical Superintendent, remained absent on active service during the whole year, and Dr. Lennox G. Teece, assisted first by Dr. A. J. Collins, and later by Dr. H. S. McLelland, discharged the duties of this post most satisfactorily.

Work of the Hospital.

At the outbreak of war the Board offered to the Military Authority 100 beds for the accommodation of soldiers requiring medical or surgical treatment. Although advantage has not been taken of this offer, a considerable number of soldiers have been admitted to the hospital throughout the year. Ward A4 has been set aside for cases of cerebro-spinal meningitis occurring among the military. In all 25 persons suffering from this disease have received attention. The mortality worked out at nearly 50%. There were 110 cases of enteric fever with 15 deaths. The case mortality of morbilli was 4% (55 cases), of scarlatina 5.5% (18 cases), and of diphtheria was 16% (50 cases). There were 327 persons suffering from tuberculosis in the hospital during the year. In 176 the disease was pulmonary. The expansion of the work of the Anti-Tuberculosis Dispensary involved an increase in the number of admissions. No less than 205 persons were treated for acute lobar pneumonia. The case mortality was 20%. The number of children suffering from acute enteritis was 23. One-third of them died. A large number of persons suffering from cardiac and other diseases of the circulatory organs received treatment.

During the year there were 361 new patients treated in the Anti-Tuberculosis Dispensary. The greater part of the work in this department is diagnostic. Suitable cases are selected for sanatorium treatment, while advanced cases should be sent into isolation. The Medical Superintendent presses the view that the value of the dispensary would be enhanced if the patients could be transferred directly to a sanatorium on the order of the medical officers.

In the surgical wards a large amount of work was carried out. The total number of operations performed was 4,619. Special tables are appended giving statistical details of the operations performed and the results. Ether was used in the majority of cases as the anæsthetic, while for minor procedures kelene was found valuable. Intratracheal insufflation was employed with satisfactory results, especially for operations on the head and neck, including those for exophthalmic goitre. The total number of cases of malignant disease dealt with was 267. In 35 the neoplasm was situated in the stomach, in 30 in the uterus, in 25 in the rectum, and in 23 in the breast. The Medical Superintendent calls attention to the fact that sufferers from this terrible malady usually apply for treatment long after all hope of a permanent cure has vanished.

There were 401 patients, 93 males and 308 females, admitted into the hospital on account of venereal disease. In 208 of these cases the patients were suffering from syphilis and in 199 from gonorrhœa. Galyl and arseno-benzol have been used in the place of salvarsan, which is no longer obtainable. The Medical Superintendent states that these substances are chemically identical, as far as can be ascertained, with salvarsan. A special ward for the accommodation of children under 10 years of age has been set aside. The statement is made that venereal disease is extremely rife among children of Sydney.

A large amount of work has been carried out in the X-ray Department. In the therapeutic branch of the department a Morton therapeutic apparatus has been installed at the cost of £100. In the Out-patient Department 34,648 persons sought treatment, and the number of attendances totalled 104,428. Both the number of patients and the number of attendances have increased very markedly since 1914. We are tempted to ask whether so large a number of persons should be treated gratuitously, or whether many of them should not have obtained medical assistance from private or lodge practitioners. In the Venereal Department 2,032 patients attended. In 1914 the number was 615. The crowd became so dense in this department that the Board was compelled to restrict the number of patients at any one time to 500.

In the Pathological Department the staff, which normally consists of five medical officers, was reduced to two. The difficulties were further increased by the additional work necessitated by the epidemic of cerebro-spinal meningitis and by the presence of malaria among the soldiers who had been to Rabaul. The total number of post-mortem examinations was 237. Dr. H. G. Chapman came to the assistance of the department by carrying out 230 chemico-pathological examinations at the Medical School. Numerous additions have been made to the Museum of morbid anatomy.

Income and Expenditure.

The ordinary expenditure for the year amounted to £46,765. In 1914 it was £45,833. Under the heading extraordinary expenditure there is an entry of £379 for equipment, buildings and repairs. The ordinary revenue amounted to £46,724. Of this sum the Government contributed £32,450, or 69.23% of total. The sum was made up of the orinary subsidy of £4,760, the bed subsidy of £11,700, the subsidies for the Anti-Tuberculosis Dispensary, and for the Venereal Clinic of £500 each, and a special grant of £15,000. The public contributed £6,562, and the patients contributed £6,289. It is pointed out that the public contributions were slightly higher than in the preceding year. On the other hand the patients contributed £185 less than in 1914. The financial operations for the year ended with a deficit of £329 13s. 9d.

HOSPITALS AND CHARITIES OF NEW SOUTH WALES.

Mr. John B. Trivett, the Government Statistician of New South Wales, has issued the usual statistical records of the activities and working of the various hospitals and charities in the State during the year ending June 30, 1915. The volume contains 82 pages of elaborate tables. It is impossible in the space at our disposal to deal with all the matter contained in the analysis.

Hospitals.

Financial Arrangements.

Among the State institutions there are three hospitals, a leper lazaret and nine mental hospitals, at which the treatment of the sick is carried out. The expenditure on these hospitals amounted to £311,692, of which £307,118 was derived from consolidated revenue. The State contributed £129,289 out of consolidated revenue, and £36,825 from the Public Works' Account toward the maintenance of subsidized hospitals. The total amount of public money expended on State and subsidized institutions and other charitable and philanthropic services was £871,329.

The Royal Prince Alfred Hospital spent in the course of the year £56,789, of which £11,000 was for new buildings, equipment and land. The revenue was made up of a special grant of £21,922, and an annual subsidy of £16,650, making a total of £38,572. This amount represents 73.4% of the total revenue of the Hospital. The Sydney Hospital spent £47,825, including £3,126 on new buildings, etc. The Government subsidy amounted to £15,366, and £14,603 was given as a special grant. The Government contribution therefore equalled 70.6% of the total revenue. The Royal Alexandra Hospital for Children had a revenue of £19,722. Of this sum the Government provided £5,680 in the form of subsidy, or 28.8%. At the Royal Hospital for Women, Paddington, the total revenue was £13,546, and the Government supplied £6,009. This is equivalent to 44.3% of the total. There are 23 hospitals in the metropolis of Sydney with a total revenue of £213,524, exclusive of the Coast Hospital, the income of which is entirely derived from consolidated revenue. There are fifteen subsidized metropoli-

tan hospitals. The aggregate revenue of these institutions, excluding the Royal Prince Alfred and Sydney Hospitals, amounts to £81,931, of which the State contributed 43.8%. The charitable public contributed £58,164 to the 25 institutions in Sydney, and patients paid £32,244 toward the cost of maintenance. In view of these figures it may be stated without fear of contradiction that the metropolitan hospitals are still largely charitable institutions supported by voluntary contributions.

In the country there are 125 hospitals, of which all but three receive State aid. The total revenue of the 125 hospitals amounts to £233,326. The State made special grants to the total value of £39,393, and subsidized these institutions to the extent of £83,740. The State therefore contributed 52.7% of the total revenue. The amount contributed by the charitable public was £67,691. Two of the institutions, however, are entirely State supported. If allowance be made for these two, the State aid to the subsidized hospitals would work out at 46%.

A special table has been compiled for the purpose of showing the cost per patient in the years 1913 and 1914. In the latter year there were seven hospitals with a daily average number of patients less than one, and twelve with an average between one and three. The average cost per occupied bed in the first group was £921.24, while that in the second group was £272.72. It appears that the figures are of small comparative value when the daily average is less than 20. At the Royal Prince Alfred Hospital the daily average was 394.6 patients, and the cost per occupied bed was £114.31. At the Sydney Hospital the daily average was 327, and the cost per occupied bed £134.6. The average cost in 1913 at these two institutions was £99.31 and £119.37 respectively. The daily average at the Royal Hospital for Women was 84 in 1913 and 102 in 1914. The average cost per occupied bed was £130.75 in 1913, and £120.68 in 1914. At St. Vincent's Hospital, Darlinghurst, the daily average in 1913 was 151, and in 1914 154. The cost per occupied bed was £66.58 in 1913, and £71.4 in 1914. At the Coast Hospital, which is a State institution, the daily average in 1913 was 335.5, and in 1914 it was 273. The average cost was £85.93 in 1913, and £74.03 in 1914. The lowest cost per occupied bed was at the Camden (Carrington) Hospital, with a daily average of 96 patients. It was £42.11. The Lewisham Hospital, with a daily average of 135 patients, shows an average cost per occupied bed of £44.83. At the other extreme there was the Hill End Hospital with a daily average of 0.07 patients, where the average cost per occupied bed was £5,871.43. The Government contributed £204 to this institution.

Staff.

In a special table the number of the members of the medical and nursing staffs and the accommodation for the patients are set out. The Royal Prince Alfred Hospital, which has 392 beds, has a staff of 45 honorary and 25 salaried medical officers. The nursing staff, exclusive of wardsmen, comprises one matron and 143 nurses. There is therefore one Resident Medical Officer to 15.68 beds. At the Sydney Hospital the medical staff comprises 46 honorary and 6 salaried officers, and the nursing staff a Matron and 120 nurses. Each Resident Medical Officer has therefore the care of patients in 20.8 beds. At the Coast Hospital there are 8 honorary and 5 salaried officers. The nursing staff consists of a Matron and 96 nurses. The number of beds apportioned to each Resident Medical Officer is 67.4. At the Royal Prince Alfred Hospital there is one nurse to every 2.7 beds; at the Sydney Hospital the proportion is almost the same, while at the Coast Hospital there is one nurse to every 3.47 beds. At the Royal Hospital for Women the proportion of beds to each Resident Medical Officer works out at 34.25, and that to each nurse at 5.7.

Admissions and Mortality Rates.

The total number of patients admitted during the year to the Royal Prince Alfred Hospital was 7,252. At the beginning of the year there were 379 patients still under treatment, and at the end of the year there were 365. The total number of deaths was 440. The death-rate was therefore 6%. At the Sydney Hospital 6,665 patients were admitted. At the beginning of the year there were 321 and at the end of the year 318 patients were under treatment. The deaths numbered 431, and the mortality 6.46. At the Coast Hospital 4,054 patients were admitted during the year. At the beginning of the year there were 289 patients still under treatment, and at the end of the year there were 409. The mortality was therefore 3.8%. The number of admissions at the St. Vincent's Hospital, Darlinghurst, was 2,996. At the beginning of the year 135 patients, and at the end of the year 134 patients were still under treatment. The number of deaths amounted to 134, and the mortality was 4.4%. While it is reasonable to compare the conditions obtaining at the Royal Prince Alfred and the Sydney Hospitals, it would obviously be unfair to extend the comparison to hospitals fulfilling a totally different purpose, and conducted in a totally different manner. The mortality at the Royal Hospital for Women was 1.08%, with a total number of 2,586 patients. The mortality at the Women's Hospital, Sydney, was 2.2%, with a total number of 997 patients, while the mortality at the South Sydney Women's Hospital was 2%, with a total number of 493 patients..

The two largest country hospitals are those at Broken Hill and at Newcastle. At the former the total number of admissions was 1,155. The number of patients under treatment at the beginning of the year was 92, and at the end of the year was 88. One hundred and thirty-one patients died. This gives a mortality of 11.3%. At Newcastle 1,303 patients were admitted during the year. There were 66 still under treatment at the beginning of the year and 76 at the end of the year. The number of deaths was 128, and the mortality therefore 9.9%.

Diseases and Case Mortalities.

A very large amount of information is included in a series of tables dealing with the number of patients admitted for treatment for various conditions. In the first set of tables the number of cases of the different illnesses treated at the several hospitals is set out. In the following table the cases are grouped under two headings—metropolitan and country. In the third table the mortality and recovery rates and the average number of days' sickness are given. Other tables are added with the fatality rates arranged in age groups, and with various other matters.

The number of cases of enteric fever treated during the year in the hospitals of the State amounted in the aggregate to 1,962. The mortality from this disease was 11.2% among the males and 9.6 among females. There were 3.56 cases of diphtheria and a case mortality for the males was 4.8% and for the females 3.8%. The case mortality of pertussis among males was 8.5% and among females 13.3%. It is interesting to note that 41 cases of malaria were treated during the year. One of the patients died. The total number of cases of tuberculosis exceeded 2,600. Of these 1,889 were instances of pulmonary tuberculosis. The case mortality of the latter form was 35.6% for males and 17.7% for females, and that of tuberculosis of other organs was 14.1% for males and 9.4% for females. The case mortality of acute miliary tuberculosis was 80% and 62.5% for males and females respectively, and of meningeal tuberculosis 82.8% and 94.8% respectively.

There were 1,357 cases of malignant disease. The case mortalities given are obviously no indication of the frequency of cure. For example, there were 186 malignant tumours of the female genital organs, with a mortality rate of 9.9%. During the year 1914 there were but 15 cases of epidemic cerebro-spinal meningitis. Nine of these patients died. Under the heading of pneumonia there are records of 1,487 males and 7,034 female patinets who suffered from this disease. The mortality among the former was 15.9% and among the latter 14.3%. There were 291 male patients with broncho-pneumonia and 237 female patients with the same disease. The mortality among the males is 18.8% and among the females 21.9% The total number of cases of gastro-enteritis, exclusive of that due to alcoholism, was 1,884. The mortality under one year of age was 36.9% for males and 40.1% for females. The mortality in patients between one and four years of age was 18.8% for males and 20.9% for females. The mortality as usual fell markedly after the fifth year, to increase somewhat in late life.

It appears that there were 2,420 accidents of pregnancy with 20 deaths. In addition 2,520 cases of normal childbirth without mortality were dealt with in the hospitals,

Of 10 illegal operations 2 ended fatally. There were 498 cases of puerperal septicæmia and 65 deaths.

Lunacy Department.

There are nine State and three private hospitals for the insane. The medical staff in these twelve institutions comprise 21 officers, and the nursing staff and attendants 997 individuals. The total number of persons treated during the year was 8,393. There were 1,421 admissions and readmissions and 469 deaths. Five male patients escaped during the year, but no females. Fifty-four of the patients were detained as criminal lunatics. In 28 cases the offence was murder, attempted murder, or manslaughter; in 6 it was assaults; in 5 sexual offences; in 14 breaking, entering, stealing, arson, etc., and in 1 false pretences. The average cost per patient was £31 15s 5d.

Leper Lazaret.

The number of lepers in the Lazaret on January 1, 1914, was 21. Four fresh patients were admitted during the year and 1 died.

Medical Registration, etc.

During the year 1914 142 medical practitioners were registered in the State of New South Wales. At the end of the year 2,109 names remained on the register. There were 27 new registrations of dental practitioners. The total number of registered dentists was 1399. There were 32 additions to the register of the Pharmacy Board, which contained at the end of the year the names of 1,168 pharmacists and 388 dealers in poison other than pharmacists.

The register of the Australasian Trained Nurses' Association contained on June 30, 1915, the names of 1,618 general nurses, 806 obstetric nurses, 88 medical members, 24 honorary members, and 36 mental nurses.

Vaccination.

In the year 1905 32 persons were vaccinated by Government Medical Officers in the State. In 1909 the number was 11, in 1910 280, and in 1911 20. There were no returns for 1912, but the number estimated for 1913 was 516,000. In 1914 6,349 persons were vaccinated.

The remainder of the report is taken up by statistics of the State Children Board, the State Hospitals and Asylums for the infirm, and the various charitable institutions.

Medico-Legal.

THE DEATH OF A CHILD.

A magisterial enquiry of some interest to medical practitioners was held on October 30, 1916, at the Parramatta Court, New South Wales, by the Coroner, Mr. Richardson Clark. The enquiry concerned the circumstances of the death of a child named Wallace William Bushell Cupitt, aged 5 years and 8 months. The father, who is an incubator maker, stated in evidence that the child had been quite well up to October 12. On that day he returned from school complaining of a sore neck. He rested for a time, then got up and played about, and had his tea, and a bath and went to bed. On the following day he got up for breakfast, but did not seem well. On the 14th his face began to "puff up," and he said that his neck was sore. In the evening he was feverish, and there was some swelling "around the jaws." On the 15th he complained of sore throat. The father rubbed the neck with turpentine and oil. He then went to a Mr. Pye, a pharmacist, and told him that the boy was not well, and had a puffy face. He did not say anything about the throat being sore. He suggested that the child was suffering from mumps, and asked what was the usual remedy. Mr. Pye said that the usual thing was to poultice the neck with *antiphlogistine*, and asked him whether he wished him to supply some. The father consented. He also gave him a tonic for the boy. He could not remember whether he told the pharmacist that the child was feverish, and did not think that the latter asked him where the pain was. He followed out Mr. Pye's directions. On the 16th they had difficulty in keeping the child in bed. The child complained of swelling and soreness of the throat. On the following day the symptoms were unchanged. The boy said that he could not swallow. The father placed a spoon on his tongue, and looked into the throat. Each side of the throat was white, but not the roof of the mouth. He was not feverish. He (witness) did not possess a clinical thermometer. He saw Mr. Pye again at about 4 p.m. on October 17, 1916. He told Mr. Pye that he had looked down the child's throat, but did not remember whether he told him what he saw. He asked for something to remove the soreness of the throat, and was given a lotion to be used three or four times a day. On the 18th the child said that he was better. One side of the throat was clean, but the other was only partially clean. The child said that his throat was still sore. The witness did not realise that the child was seriously ill. On October 18, 1916, he went for Dr. Kearney, and told him that he had been treating his child for mumps. He telephoned for the doctor to Dr. Brown. The latter came very shortly after. In conclusion witness stated that there was a great deal of mumps in the neighbourhood, and that he had heard that King's School had been closed on this account

Dr. Walter Sigismund Brown stated that on October 18, 1916, he was asked over the telephone, by Dr. Kearney, to attend the deceased at Hassall Street. He reached the house at about 3.30 p.m., but the child was dead when he arrived. He made an external examination. There were no marks of violence. There was a swelling on each side of jaw, and some white membrane on each side of the throat. In his opinion the child had died of paralysis of the heart following on diphtheria. Witness had listened to Cupitt's evidence. He recognized that he would have thought that the condition was mumps. It was quite sufficient for Pye to have given the usual remedies for mumps without asking any further questions, and to assume that it was mumps, as mumps were all over the place. Stiffness of the neck was not typical of diphtheria. It was typical of diphtheria for the tonsils to be swollen; they were at the angle of the jaws. He thought that the child might have been better when he said that he was. He held the opinion that feverishness could be ascertained without a thermometer. The question of the child having been feverish would not have had anything to do with the diagnosis of diphtheria. He did not think that there was any reason why Mr. Pye should have asked Cupitt, on October 17, what he saw in the boy's throat, and he still said so, notwithstanding that Pye gave Cupitt something to swab the throat out with. He did not think that there was any reason why Pye or Cupitt should have suspected that the child was suffering from diphtheria. He thought that it was "a cautious act on the part of Mr. Pye to have prescribed for the deceased as he did without having seen the deceased, and he did not think he ought to have advised Cupitt to see a doctor." He thought that a chemist was quite right in treating a case of mumps. The only complication was an inflamed testicle. He did not think that if deceased had been treated at any time with antitoxin it would have made any difference. Deceased had died of ordinary diphtheria. The percentage of deaths was much less than it was formerly. If he had attended the child early he would have administered antitoxin. He did not think that if he had had antitoxin three times a day for a week it would have saved life.

Witness had known Mr. Pye for many years. He thought it silly for a chemist to refuse to supply medicine for common ailments of life without a prescription from a doctor. Chemists frequently dispensed medicine without a doctor's prescription, and without seeing the patient. He approved of that course, and he did not see anything wrong in it. He referred to common ailments.

In his evidence, Leslie Walter Pye, a pharmacist, gave an account of his part in the treatment of the child's condition. He corroborated Cupitt's statements in the main. Cupitt had suggested that the ailment might have been mumps, and he had said that it was probable. He had not thought of diphtheria. He charged 1s. 6d. for the first medicines and 1s. for the second. He thought that he supplied medicines without a doctor's prescription on an average four or five times a day for simple ailments. On some days he would dispense more.

Mr. Richardson Clark found that the child had died from diphtheria, and that no blame attached to Pye. In commenting on the case he said that, although no blame was put on Pye, he thought it prudent to draw the attention of the proper authorities to the fact, as disclosed in evidence, that approval was given by Dr. Brown to chemists prescribing for sickness without seeing the patient.

Proceedings of the Australasian Medical Boards.

NEW SOUTH WALES.

The following have been registered under the provisions of "The Medical Act, 1912 and 1915," as duly qualified medical practitioners:—

McGiven, John Francis, L.R., C.P., Ed., L.R.C.S., Ed., L.F.P.S., Glasg., 1898.

Brady, Albert Edward, M.B., B.S. (Adelaide), 1905.

SOUTH AUSTRALIA.

The undernamed has been registered under the provisions of the "Medical Act, 1880," as a duly qualified medical practitioner:—

Krakowsky, Alexander, M.D., State Exam., Russia, 1883.

Medical Appointments.

Dr. W. H. Nelson has resigned his position as Medical Officer of Health at Greenbushes, Western Australia. Dr. John Hume has been appointed in his stead.

Dr. William A. McDonald, Assistant Medical Officer at the Rookwood State Hospital and Asylum, New South Wales, has been appointed Medical Superintendent to the Liverpool State Hospital and Asylum. This position was held until recently by Dr. J. A. Beattie.

Dr. Wilfred N. Davies has been appointed Medical Officer at Culcairn, New South Wales.

The following gentlemen have been appointed Medical Officers to attend destitute persons and aborigines in the districts named:—Dr. E. L. Borthwick (Campbelltown), Dr. F. J. Chapple (Clarendon), Dr. Sydney L. Dawkins (Stirling), Dr. Henry H. Formby (Onaunga, *ex aborigines*, Strathalbyn Corporation and District), Dr. T. Gibson (Quorn Corporation and radius of 15 miles), Dr. P. Gorrie (Coglin and Yongala), Dr. F. J. E. Juttner (Tanunda), Dr. K. McEwin (Balaklava), Dr. Clive Newland (Morphett Vale and Noarlunga), Dr. C. W. Purves (English and Neales), Dr. J. Riddell (Kapunda Corporation and District), Dr. W. H. Russell (Edithburgh Corporation and Warooka), Dr. M. W. Sprod (Mannum, *ex aborigines*), and Dr. A. F. Stokes (Brighton Corporation).

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxi.

Queen's Memorial Infectious Diseases Hospital, Fairfield, Senior Assistant Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	Brunswick Medical Institute. Bendigo Medical Institute. Prahran United F.S. Dispensary. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United F.S. Institute.
WESTERN AUSTRALIA. (Hon. Sec., 230 St. George's Terrace, Perth.)	Swan District Medical Officer. All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Department of Public Instruction—Appointments as Salaried Medical Officers, with duties which include the treatment of school children. Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance Association and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Orange. F.S. Lodges at Parramatta, Penrith, Auburn, and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	F.S. Lodges, Wellington, N.Z.

Diary for the Month.

Nov. 21.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Nov. 24.—N.S.W. Branch, B.M.A., Branch (Ordinary).
Nov. 28.—N.S.W. Branch, B.M.A., Medical Politics Committee—Organization and Science Committee.
Nov. 29.—Vic. Branch, B.M.A., Council.
Nov. 30.—S. Aust. Branch, B.M.A., Branch.
Dec. 5.—N.S.W. Branch, B.M.A., Ethics Committee.
Dec. 6.—Vic. Branch, B.M.A., Annual Meeting.
Dec. 8.—Q. Branch, B.M.A., Annual Meeting.
Dec. 1.—Q. Branch, B.M.A., Annual Meeting.
Dec. 12.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Dec. 12.—Tas. Branch, B.M.A., Council and Branch.
Dec. 13.—South Sydney Med. Assoc. (N.S.W.).
Dec. 14.—Vic. Branch, B.M.A., Council.
Dec. 15.—N.S.W. Branch, B.M.A., Branch (Ordinary).
Dec. 15.—Eastern Suburbs Med. Assoc. (N.S.W.).

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.